

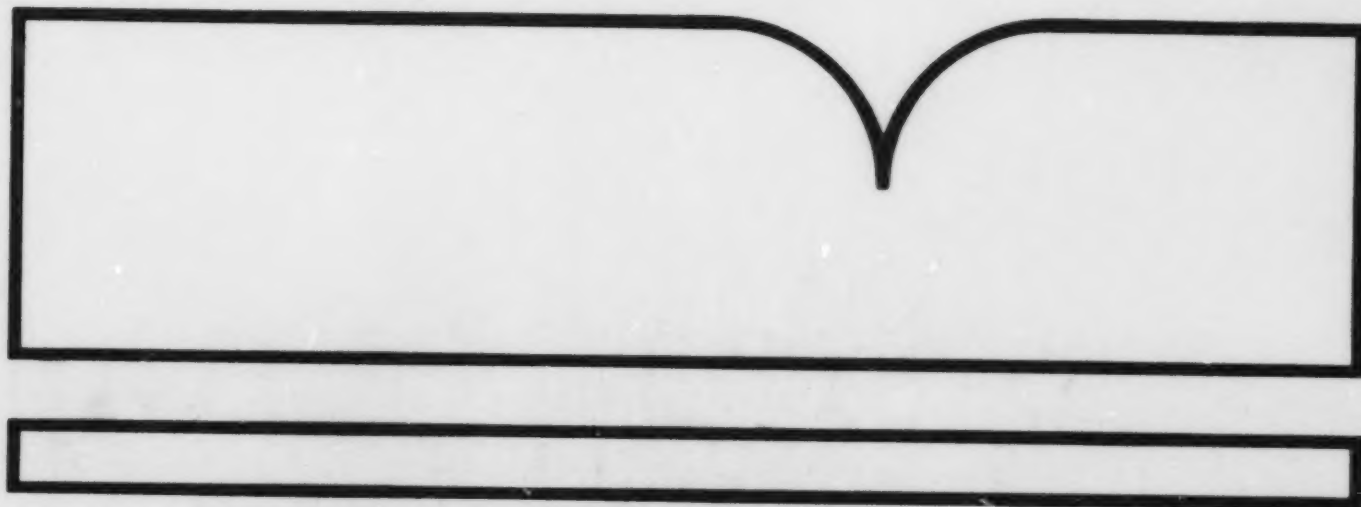
Wastewater Treatment Facilities South Shore
Lake Tahoe Basin: South Tahoe Public Utility
District, Douglas County Sewer Improvement
District No. 1

Sedway/Cooke
San Francisco, CA

Prepared for

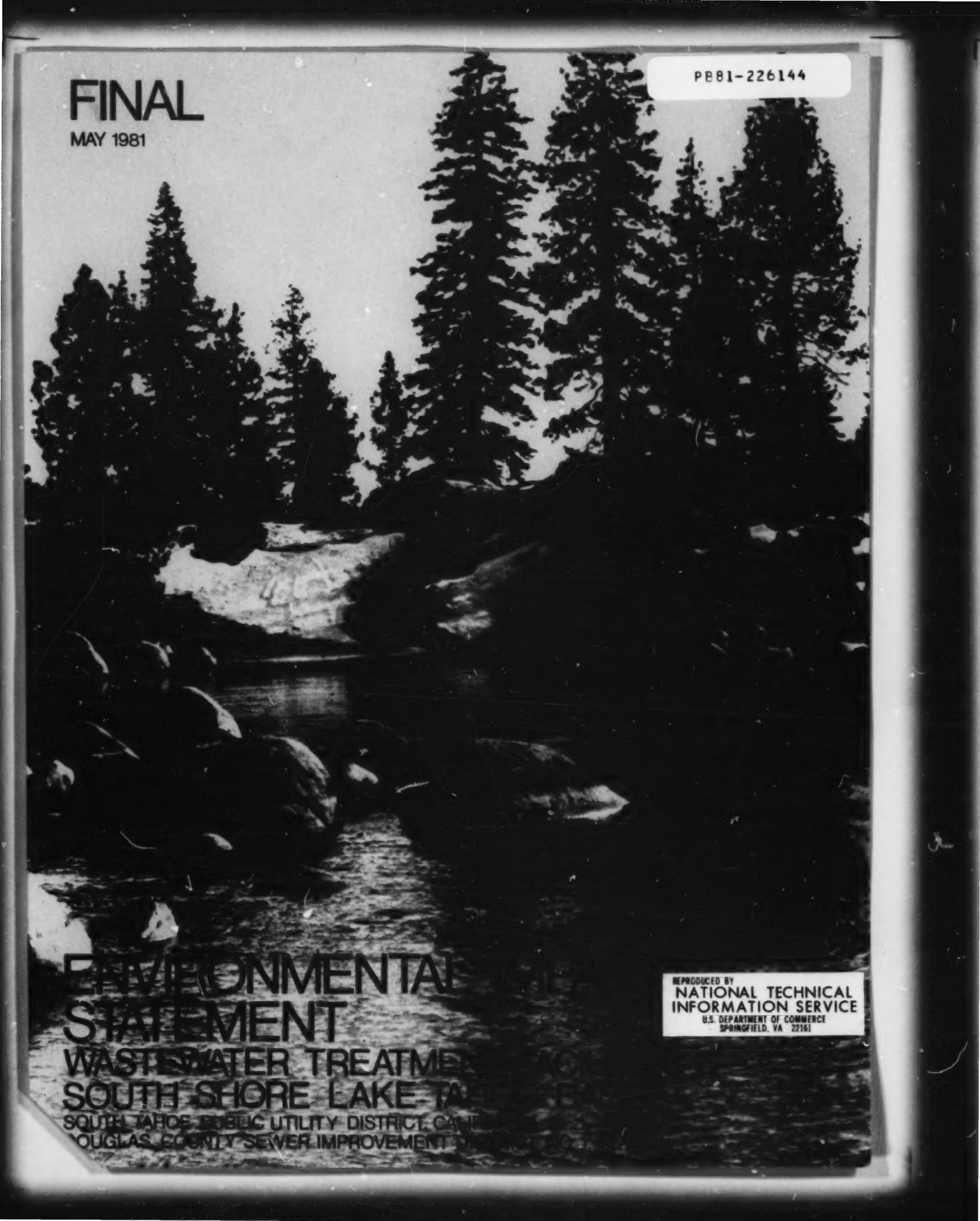
Environmental Protection Agency
San Francisco, CA

May 81



U.S. Department of Commerce
National Technical Information Service

NTIS



FINAL

MAY 1981

PB81-226144

ENVIRONMENTAL STATEMENT

WASTEWATER TREATMENT SOUTH SHORE LAKE TAHOE

SOUTH TAHOE PUBLIC UTILITY DISTRICT, CALIFORNIA
DOUGLAS COUNTY SEWER IMPROVEMENT DISTRICT NO. 1

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA 22161

REPORT DOCUMENTATION PAGE		1. REPORT NO.	2.	3. Report's Accession No. PB81 226144
4. Title and Subtitle Environmental Impact Statement Wastewater Treatment Facilities South Shore Lake Tahoe Basin: South Tahoe Public Utility District, Douglas County Sewer Improvement District No. 1		5. Report Date May 1981		
7. Author(s)		6.		
9. Performing Organization Name and Address Sedway Cooke San Francisco, CA		8. Performing Organization Rept. No.		
12. Sponsoring Organization Name and Address U.S. Environmental Protection Agency 215 Fremont Street San Francisco, CA 94105		10. Project/Task/Work Unit No.		
		11. Contract(C) or Grant(G) No. (C) (G)		
15. Supplementary Notes		13. Type of Report & Period Covered		
		14.		
16. Abstract (Limit: 200 words) This Final Environmental Impact Statement on the wastewater treatment programs, proposed by the South Tahoe Public Utility District and the Douglas County Sewer Improvement District No. 1, contains EPA's recommendations on the proposed projects, a mitigation program, and responses to public comment and resultant revisions and additions to the Draft EIS, issued in October of 1979. This document provides a summary of the many events that have occurred since the Draft EIS was published, events which have altered the projects originally proposed by the wastewater agencies. Based on the impact analysis of various growth scenarios performed in the Draft EIS and commitments to mitigate primary and secondary adverse impacts, EPA recommends for South Tahoe Public Utility District a 7.5 mgd maximum daily flow wastewater treatment plant which produces secondary treated and filtered effluent for agricultural irrigation in Alpine County, California. Possible further plant expansion is contingent upon approval by various local and regulatory agencies and adequate performance under the mitigation program. With respect to the Douglas County Sewer Improvement District No. 1, a lack of progress in developing a mitigation program has resulted in an Agency decision to postpone finalizing the EIS for that district. Two appendices have been prepared as part of the Final EIS. Appendix A contains the written comments submitted on the Draft EIS. Appendix B contains the mitigation program, including implementation statements from the responsible agencies.				
17. Document Analysis a. Descriptors Lake Tahoe Basin South Lake Tahoe Wastewater treatment Treatment facilities Douglas County NV Environmental impact statements Air quality b. Identifiers/Open-Ended Terms c. COSATI Field/Group				
18. Availability Statement		19. Security Class (This Report)	21. No. of Pages	
		20. Security Class (This Page)	22. Price	

ABSTRACT

This Final Environmental Impact Statement on the wastewater treatment programs, proposed by the South Tahoe Public Utility District and the Douglas County Sewer Improvement District No. 1, contains EPA's recommendations on the proposed projects, a mitigation program, and responses to public comment and resultant revisions and additions to the Draft EIS, issued in October of 1979. This document provides a summary of the many events that have occurred since the Draft EIS was published, events which have altered the projects originally proposed by the wastewater agencies. Based on the impact analysis of various growth scenarios performed in the Draft EIS and commitments to mitigate primary and secondary adverse impacts, EPA recommends for South Tahoe Public Utility District a 7.5 mgd maximum daily flow wastewater treatment plant which produces secondary treated and filtered effluent for agricultural irrigation in Alpine County, California. Possible further plant expansion is contingent upon approval by various local and regulatory agencies and adequate performance under the mitigation program. With respect to the Douglas County Sewer Improvement District No. 1, a lack of progress in developing a mitigation program has resulted in an Agency decision to postpone finalizing the EIS for that district. Two appendices have been prepared as part of the Final EIS. Appendix A contains the written comments submitted on the Draft EIS. Appendix B contains the mitigation program, including implementation statements from the responsible agencies.

TABLE of CONTENTS

	<u>Page</u>
I. INTRODUCTION & SUMMARY	
Proposed Action	1
Need for Action	1
Proposed Projects	1
Implications of No Project	2
Need for an EIS	3
Focus of the EIS	3
DEIS Summary	6
Relationship of DEIS and the FEIS	14
NEPA Process and Status of the Districts' Participation	14
Recommended Growth Scenario and Implications for the	
Proposed Wastewater Project	15
Evaluation of Alternative Growth Scenarios	15
Recommended Growth Scenario and Implications for the STPUD	
Proposed Project	15
Mitigation Program	19
Interrelationships Among Nonattainment Plan, Water Quality	
Plan, Bistate Compact, and Proposed Project	19
STPUD Mitigation Program	20
II. UPDATE OF RECENT EVENTS	
Bistate Compact	23
Revised Water Quality Management Plan	26
Santini-Burton Legislation	27
California Tahoe Regional Planning Agency (CTRPA)	
1980 Regional Plan	27
Mitigation Task Force	28
III. FACILITY PLANS UPDATE	
South Tahoe Public Utility District	29
Background	29
Existing Treatment Processes	31
Facilities Planning	31
Recommended Project	37
No Project Alternative	40
Douglas County Sewer Improvement District #1	45
Background	45
Existing and Future Discharge Permits	46
Plant Capacity	47
Recommended Project	49

IV. RESPONSES TO COMMENTS

Page

Introduction	57
Responses to Comments on Project Descriptions and Alternatives	63
General Overall Comments	63
Introduction	65
Growth Scenarios Impact Assessment Methodology	67
Growth Scenarios Assumptions	69
Wastewater Management Alternatives	77
Description of Study Area	79
Direct Effects	80
Responses to Comments on Lake Tahoe Basin Environmental Setting and Impacts	82
Water Resources and Water Quality	82
Water Resources	82
Water Quality	83
Geology and Soils	109
Biology	111
Noise	113
Meteorology and Air Quality	116
Visual Resources	124
Land Use	129
Housing	135
Transportation	136
Recreation	146
Public Services/Fiscal Concerns	148
Health	148
Schools	148
Law Enforcement	150
Fire Protection	151
Solid Waste Management	151
Fiscal Concerns	154
Utilities	158
Water Supply	158
Wastewater Treatment	162
Energy	165
Cultural, Archaeological, and Historical Resources	166
Responses to Comments on Upper Carson River Basin Environmental Setting and Impacts	169
Water Resources and Water Quality	169
Meteorology and Air Quality	174
Visual Resources	175
Land Use	176
Housing	179
Transportation	180
Recreation	181
Public Services	182
Utilities	183
Responses to General Comments on the Mitigation Measures	184
Errata Sheet to the DEIS	185
Responses to Comments on the DEIS Technical Appendices	195

V. MITIGATION PROGRAM	<u>Page</u>
Background	201
Formulation of Mitigation Measures	201
Mitigation Measure Priorities	202
Mitigation Program	203
VI. LIST OF PREPARERS	205
VII. BIBLIOGRAPHY	209

LIST of TABLES

	<u>Page</u>
Table 1: Summary of Current Problems at the South Tahoe Public Utility District Facility	4
Table 2: Summary Comparison of the Five Alternative Growth Scenarios	9
Table 3: Secondary Impacts Summary	10
Table 4: Estimated Sewage Treatment Plant Capacity for STPUD	18
Table 5: Background Summary of STPUD Treatment Facilities	30
Table 6: NPDES Requirements for STPUD	32
Table 7: Existing STPUD Treatment Facilities	35
Table 8: Phase I Headstart Program for STPUD	35
Table 9: Recommended STPUD Project Description	38
Table 10: Estimated Sewage Treatment Plant Capacity for STPUD	43
Table 11: Permit Requirements for DCSID	48
Table 12: Recommended DCSID Project Description	52
Table 13: List of Individual(s)/Agency(s) Submitting Verbal Comments on the DEIS	59
Table 14: List of Individual(s)/Agency(s) Submitting Written Comments on the DEIS	60
Table 15: Water Use and Water Rights Summary for the California Portion of the Lake Tahoe Basin	160

LIST of FIGURES

	<u>Page</u>
Figure 1: Assumptions for Alternative Growth Scenarios	8
Figure 2: STPUD Wastewater Reclamation Plant — Schematic Flow Diagram	34
Figure 3: Location Map for DCSID Proposed Project	51
Figure 4: Proposed New DCSID Facilities — Process Schematic	54
Figure 5: The Settelmeyer Ranch with Proposed Improvements	55
Figure 6: Average Daily Traffic	139

I. INTRODUCTION & SUMMARY

PROPOSED ACTION

NEED FOR ACTION

The South Tahoe Public Utility District (STPUD) serves the California portion of the south shore area of the Lake Tahoe Basin from Emerald Bay in the west to the state line in the east. The present advanced wastewater treatment facility was constructed in 1968. Effluent from the plant is exported out of the basin over Luther Pass to Indian Creek Reservoir in Alpine County, California. The treatment plant intermittently violated waste discharge requirements in 1976 and 1977. Consequently, the Lahontan Regional Water Quality Control Board (RWQCB) issued a Cease and Desist Order to the district in June 1977. The district was also restricted by Lahontan RWQCB in the number of new sewer hook-ups it could make each year, until it could demonstrate that effluent quality would consistently meet waste discharge requirements and receiving water quality standards. To meet waste discharge requirements, the district undertook a facilities planning program.

The Douglas County Sewer Improvement District No. 1 (DCSID) serves the Nevada portion of the south Lake Tahoe area. The secondary treatment plant, originally designed to treat an average maximum monthly flow of 3 million gallons per day (mgd), was constructed in 1968. Effluent from the plant is exported out of the basin to the East Fork Carson River (in the Upper Carson River Basin), discharged during the winter, and used for agricultural irrigation during the growing season. Discharge requirements of the National Pollution Discharge Elimination System (NPDES) permit for biochemical oxygen demand and for suspended solids were frequently violated during 1976 and 1977. Consequently, DCSID also initiated a facilities planning program which called for federal financial assistance to implement.

PROPOSED PROJECTS

Both wastewater agencies have amended their original proposals since they were originally released in 1978.

South Tahoe Public Utility District

STPUD's earlier proposal called for modification to the treatment process and for expansion of its plant capacity. The Facility Plan Update, issued in February of 1981, recommends only plant modifications to improve plant reliability without increasing the allowable connections above those permitted by the Bistate Compact. Specifically, the proposed project consists of secondary treatment and effluent transport to Alpine County for storage during the winter and agricultural irrigation during the summer. Project elements involving existing facilities include modifications to the wastewater treatment plant and improvements to the export

system. Under the proposed plan, the 7.5 mgd (maximum daily flow) treatment plant would produce secondary treated and filtered effluent for reuse. Improvements to plant and unit processes would be made to prevent effluent discharge within the Lake Tahoe Basin and to ensure an effluent quality which meets user needs and environmental regulations. Facility modifications to achieve reliability would involve flow equalization, standby units for critical processes, standby chemical treatment, and adequate emergency storage and hydraulic capacity to handle peak flows. Improvements to the export system would include additional surge protection for the low-lift line and a larger pump and motor at the pump station to accommodate diurnal peak flows.

The recommended plan for effluent reuse is through reclamation facilities that would consist of an effluent storage reservoir for the non-irrigation season, spray and flood irrigation systems, a diversion canal to redirect Indian Creek around the storage reservoir, and a monitoring system. A storage reservoir with a capacity of 3,844 acre-feet would be constructed on the Heise Property adjacent to Stevens Lake. Irrigation would be conducted on the Heise site as well as on the properties along Diamond Ditch. Both center pivot sprinkler and flood irrigation would be practiced.

Douglas County Sewer Improvement District No. 1

The recommended project proposed by DCSID involves complete land application of effluent by July 1, 1983. Existing wastewater management facilities would be improved to accommodate the original design flow of an average flow of 3 mgd and a peak monthly flow of 3.75 mgd (or 4.5 mgd on a maximum daily flow basis). The Settlemeyer Ranch in the West Carson Valley is the recommended land disposal site. The district and Mr. Settlemeyer have approved an agreement which specifies that Mr. Settlemeyer must accept effluent for at least 25 years. In addition, Mr. Settlemeyer has received a permit for the secondary water rights to district effluent.

The ranch is located approximately two miles west of U.S. 395 along Genoa Lane and comprises a total of 1,100 acres. Existing irrigation facilities include ditches for overland flow irrigation, some tailwater return ditches, some laser level fields, and a containment pond for storage. The ranch currently supports a dairy operation including pasture and cropland. A full-scale demonstration project of winter land application is presently being conducted on the Settlemeyer Ranch. The results of this project will be used to determine the location and extent of the required tailwater return system and storage reservoir.

IMPLICATIONS OF NO PROJECT*

The no project alternative is defined as that action which would occur without any federal or state financial assistance. Under this alternative, STPUD could do

*For reasons described further on, the discussion here is restricted to the STPUD project because of DCSID's lack of progress in developing a mitigation program as called for in the Draft EIS.

nothing, attempt to finance a portion of the program, or finance the entire program.

The implications of the first action for water quality are serious. STPUD is already experiencing great difficulties in maintaining the advanced wastewater facility. The STPUD facility is becoming increasingly susceptible to failures and violations of water quality standards simply because the overall system is aging and in need of upgrading. Interim plant modifications, such as those being undertaken with an EPA-funded Headstart Program, improve the situation only temporarily by increasing the system's reliability. Briefly, the district's problems can be categorized into these areas:

- greater frequency in equipment breakdowns, due to age and condition of treatment equipment;
- lack of adequate treatment system standby equipment; and
- increased cost of wastewater treatment, which limits the district's ability to make major plant improvements without grant funding assistance.

A summary of these problems is outlined in Table I. Failure to rectify these problems would result in a continued threat to the quality of the basin's water resources.

Alternatively, STPUD could finance the proposed project or portions of it by itself. Because both state and federal statutes require protection of the basin's water quality, STPUD must make treatment plant improvements even if no federal funding is available. The local repayment cost of the \$28 million bond sale that would be required to finance the complete project (assuming bonds would be approved and could be sold at 10 percent interest) would be about \$3.3 million per year or about \$143 per year per single family dwelling. This cost would be in addition to the cost of operation and maintenance of the sewer collection, treatment and disposal facilities, and would impose a substantial financial burden on the district's users.

With grant funding, the local share costs are estimated at about \$6 million which would have an annual bond repayment of about \$0.7 million or \$30 per single family dwelling. The \$30 per year cost would be offset by a reduced operating cost, due to the conversion from advanced treatment to filtered secondary treatment.

NEED FOR AN EIS

FOCUS OF THE EIS

The National Environmental Policy Act requires an environmental analysis of federally funded construction grant projects. The decision by the U.S. Environmental Protection Agency (EPA) to prepare an EIS was based on the potential for environmental degradation and on the controversy surrounding various local, state, and federal actions in the Lake Tahoe Basin. Because the direct effects from construction of the facilities (such as disruption of traffic, creation of nuisance noise and dust, disturbance of landforms and natural vegetation and

TABLE I
SUMMARY OF CURRENT PROBLEMS AT THE SOUTH
TAHOE PUBLIC UTILITY DISTRICT FACILITY

EQUIPMENT BREAKDOWN

Furnace

During the past four year period, each of the three furnaces at the treatment plant have had failures requiring major shutdowns in furnace operation. There was no provision for emergency sludge storage during the shutdown, and a temporary emergency sludge storage pond was constructed at the plant site. The proposed project would convert the lime furnace to a standby sludge furnace, and the carbon furnace would no longer be required.

Lime Clarification

In 1980, the lime clarification system had to be shut down to clean the interior of plant piping, because the lime buildup was resulting in basin overflows at the plant site. The proposed project would convert the lime clarification system to secondary clarification.

Primary Clarification

The failure of the mechanical drive equipment of the thirteen year old primary clarifier, in March 1981, forced the district to process wastewater flows of about 4.5 mgd with only a twenty-two year old primary clarifier in service. The old primary clarifier has a rated capacity of 2.7 mgd, and the treatment plant was at a near upset condition at the end of the week when the (1968) primary clarifier was placed back into service. (Note: if the plant inflow had been at normal levels during this period, there could have been a serious water quality problem at the plant). A new primary clarifier would be constructed under the proposed project.

Carbon System

The carbon contact chambers have severe corrosion pitting on the tanks. Corrosion and collapsing of many of the well screens have also been detected. This treatment system is to be abandoned as part of the proposed project.

Table I (Continued)

Export Line

The export pipeline broke 8 times in 1980. The proposed project would install equipment to relieve surge pressures on the low pressure line.

STANDBY EQUIPMENT

Filter System

The multi-media filtration system consists of 3 pairs of filters. When a set of filters is taken out of service for maintenance, the capacity of the system is reduced by one-third. The proposed project recommends separating the filter pairs so that all six may be operated in parallel. With the parallel operation of the filters, a filter may be taken out of service without greatly affecting the overall operation.

Emergency Power

In January 1980, about 500,000 gallons of partially treated wastewater was discharged to Lake Tahoe because of insufficient emergency standby power. A diesel driven emergency pumping station is being built under the Headstart grants program.

COST OF TREATMENT

Cost

The district's ability to rectify the above problems and to make major modifications is becoming more difficult each year, because of Proposition 13 which reduced revenues generated by taxes, and because of the limited number of new sewer connections.

Source: South Tahoe Public Utility District

habitat, etc.) and from operation of the facilities (such as energy consumption, changes in quality and use of Indian Creek Reservoir, effect on soils and crops, etc.) were covered in the facility plans and companion environmental impact reports (see Environmental Impact Report on South Tahoe Public Utility District Wastewater Facilities Planning Program and Douglas County Sewer Improvement District No. 1 Facility Planning Report for Wastewater Management), the Draft EIS (DEIS) primarily documented the indirect effects of expanding the STPUD and DCSID sewage treatment facilities. In particular, the secondary impacts of the urbanization in the basin that could be accommodated by the proposed projects were assessed.

DEIS SUMMARY

The DEIS formulated a series of growth scenarios to assess the secondary impacts of implementing the proposed projects. The impact assessment suggested a number of mitigation measures that could minimize the environmental consequences of the proposed projects.

Impact Assessment Methodology

Assumptions about the major factors influencing growth were combined to develop five growth scenarios which together define a reasonable range of probable futures regarding: (1) levels of south shore growth, (2) distributions of growth among STPUD and DCSID areas, and (3) potential levels of "spillover" of residential demand and commercial activity to areas outside south shore. The major differences among scenarios result from the assumptions made about the level of economic growth (related primarily to the expansion of gaming) and the level of population growth (related primarily to the amount of housing developed).

For the purpose of the EIS, growth scenarios were defined so that they:

- could be related to capacity alternatives for wastewater treatment plants;
- included consideration of all areas where growth could be affected by capacity decisions for STPUD and DCSID facilities;
- reflected the influence of major factors affecting growth, particularly those sensitive to public policy decisions; and
- included a reasonable range of alternative scenarios given uncertainties regarding factors affecting growth.

Five sets of assumptions concerning future population growth and economic development were generated (see Figure 1). These growth scenarios described the way growth (gaming and housing) could occur. The levels of development described by the scenarios range from very little additional growth to full buildout of available land (under current land use plans) in the south shore. The population and urbanization levels of each of these growth scenarios and the treatment capacity needed to serve them are shown in Table 2.

Secondary Impacts

The effects, examined in the EIS, of implementing the proposed projects are far-reaching because they concern all aspects of the natural and social environments. Briefly, they relate to changes in the land use pattern and commitments of certain critical environmental resources to urban use; to greater demands on community facilities and services; and to changes to water, air and visual quality. It is important to note that these impacts are not evenly distributed among population groups—residents, vacant landowners, developers, casino owners, and visitors.

The impacts on the natural and social environments are summarized in Table 3. The ratings should be interpreted loosely because they combine impacts occurring in STPUD and DCSID. For example, a highly adverse impact in STPUD may have been balanced with a negligible impact in DCSID to arrive at a summary rating of "adverse". Nevertheless, the ratings give an indication of the direction of the impact (beneficial versus adverse) and of the degree of impact among scenarios. A brief description of the impacts as they vary by growth scenario and by location is provided below.

Measurement and analysis of impacts in the Upper Carson River Basin reflect only those attributed to the spillover population from the Lake Tahoe Basin and do not include impacts associated with in-migration from other areas.

Lake Tahoe Basin Natural Environment

Water Quality. Water quality in Lake Tahoe and its tributaries is affected by land disturbance and vegetation removal, both of which would increase with continued urbanization. Although water quality of the lake is still excellent, nutrients from surface runoff have stimulated algal growth, particularly in near-shore waters. Large amounts of soil (sediment plumes) have also been detected at mouths of tributaries draining urban watersheds. The intensity and magnitude of these problems coincide closely with the pace of residential and commercial development of the basin over the past decade. Relatively speaking, those scenarios corresponding to high population and commercial growth scenarios are more likely to harm water quality in the basin. Scenarios 2 and 5, in particular, were determined to contribute the greatest amount of pollutants to Lake Tahoe.

Significant impacts result from development in land of high erosion hazard, where disturbing soil or vegetation ultimately increases sedimentation rates. Similarly, construction activity in stream environment zones damages or destroys the function of these areas as conveyors and purifiers of spring runoff. The combined effect of developing these lands is to accelerate nutrients and sediment loadings, increase algal growth, and reduce water clarity. The effects in turn, degrade the aesthetic value of the lake and diminish its suitability for water contact recreation. Because of the amount of development projected under them, Scenarios 2 and 5 in STPUD's service area and Scenarios 4 and 5 in DCSID's service area pose the greatest threat to high erosion hazard lands and stream environment zones.

Biology. Stream environment zones are also valuable fish and wildlife habitats. Construction activities that encroach upon these lands, in varying degrees under the five scenarios, would also disturb or destroy sensitive biological resources. Similarly, sensitive habitats and wildlife are more likely to be disrupted under the high growth scenarios. Scenarios 2 and 5 were considered to have the most significant impact on the basin's biological resources.

FIGURE I
ASSUMPTIONS FOR ALTERNATIVE
GROWTH SCENARIOS*

Douglas County Sewer Improvement District		Low	Medium	High
South Tahoe Public Utility District	High	Scenario 2		Scenario 5
	Medium		Scenario 3	
	Low	Scenario 1		Scenario 4

*Low, Medium and High refer to levels of population growth and economic development.

TABLE 2
SUMMARY COMPARISON OF THE FIVE
ALTERNATIVE GROWTH SCENARIOS

	SCENARIOS				
	1	2	3	4	5
CHARACTERISTICS					
Housing Units					
STPUD	18,655	26,583	22,619	18,655	26,583
DCSID	4,652	4,652	7,935	11,218	11,218
Average summer population	150,740	187,710	195,890	208,190	240,800
Employment (jobs)	25,040	27,530	31,240	35,840	38,000
Casino Activity (square feet)	190,000	190,000	240,000	300,000	300,000
IMPLICATIONS					
Required Treatment Plant Capacity (mgd) ¹					
STPUD	7.3	9.9	8.7	7.2	10.0
DCSID	3.1	3.1	4.6	6.6	6.3
Population Spillover into Upper Carson River Basin	4,270	3,450	7,200	21,370	18,980

¹Figures are for maximum daily flows.

TABLE 3

SECONDARY IMPACTS SUMMARY

IMPACTS	GROWTH SCENARIOS				
	SCENARIO 1	SCENARIO 2	SCENARIO 3	SCENARIO 4	SCENARIO 5
LAKE TAHOE BASIN: NATURAL ENVIRONMENT					
High erosion hazard lands	-	-	--	---	---
Stream environment zones	-	--	--	---	---
Pollutant loadings on lake	o	--	-	-	---
Lake eutrophication	o	-	-	-	---
Seismic risk	o	-	-	-	---
Rare and endangered species	o	-	-	--	---
Ambient noise levels	o	-	o	o	-
Air quality	o	--	-	-	---
Visual quality	-	-	--	--	---
LAKE TAHOE BASIN: SOCIAL ENVIRONMENT					
Changes in land use	-	--	-	--	---
Affordable housing availability	--	o	-	--	-
Quality of housing stock	o	o	-	--	-
Ability to develop subdivided lots	--	o	-	--	-
Traffic movement	-	--	---	---	o
Quality of outdoor recreation experience	-	--	--	--	---
Delivery and quality of health care, schools, and police and fire protection	-	--	--	--	---
Collection and disposal of solid waste	-	-	-	-	---
Per-unit costs/revenues of public services	+	+	+	+	++
Water supply	o	--	--	--	---
Sewage capacity--STPUD	o	--	-	o	---
Sewage capacity--DCSID	o	o	-	--	---
Sewage treatment plant costs--STPUD	o	--	-	o	---
Sewage treatment plant costs--DCSID	-	-	--	--	---
Delivery and reliability of energy supply	-	--	--	--	---
Historical/cultural resources preservation	-	--	--	-	---
UPPER CARSON: NATURAL ENVIRONMENT					
Seismic risk	o	o	-	--	--
Biological habitat preservation	o	o	o	o	-
Flood hazards	o	-	-	--	---
Ambient noise levels	o	o	o	-	-
Air quality	o	o	o	o	o
Visual quality	o	o	-	--	---
UPPER CARSON: SOCIAL ENVIRONMENT					
Changes in land use	-	-	--	---	---
Traffic movement	-	-	-	-	-
Availability of recreational facilities	o	o	o	o	o
Delivery and quality of health care schools, and police and fire protection	-	-	--	--	---
Collection and disposal of solid waste	o	o	-	--	---
Water supply	--	--	---	---	---
Use of agricultural wastewater irrigation--Alpine County	o	-	o	o	-
Use of agricultural wastewater irrigation--Carson Valley	o	o	o	-	-
Delivery of energy supply	o	o	o	-	-
Historical/cultural resources preservation	-	-	-	--	---

IMPACT RATINGS:

+++ Extremely Beneficial
 ++ Highly Beneficial
 + Beneficial

--- Extremely Adverse
 -- Highly Adverse
 - Adverse

o Neutral/Negligible

Noise and Air Quality. Ambient noise levels would rise and air quality would deteriorate as the numbers of residents and visitors increased. Greater traffic volumes, particularly along Kingsbury Grade under Scenarios 4 and 5, would subject basin residents and users to unacceptable noise levels. Existing traffic volumes already cause violations of the carbon monoxide (CO) air quality standard. Under all scenarios, traffic volumes in the south shore would result in more frequent violations of the EPA's CO standards; in some cases by as much as 65 percent above acceptable levels. The CO concentrations are expected to be greatest under Scenarios 3, 4, and 5.

Visual Resources. Increased development would further degrade the area's outstanding visual amenities. Most development is anticipated to locate close to major roadways, thus, impairing a large number of view corridors, even under low growth scenarios (1 and 4 for the STPUD service area). Under all scenarios, the Lake Tahoe Basin would be transformed from a natural to a more urban environment, particularly in those areas most accessible to visitors and residents.

Lake Tahoe Basin Social Environment

Land Use. Changes in land use under each of the various scenarios are dramatic. In general under the low growth scenarios, the opportunity is greater for planning and coordinating the location and timing of growth to avoid conflicts between land use, environmental quality, and economic development. The economic development associated with Scenarios 2 and 5 would lead to full utilization of general commercial designated lands in STPUD and under Scenarios 4 and 5 of all commercial lands in DCSID.

Housing. Because of the growth in south shore employment and the increasing number of retired households and second-home buyers, demand for housing in the south shore basin is strong under all scenarios. Housing prices are likely to increase by at least the rate of inflation under all scenarios. The progressive imbalance between housing cost and affordability will have several effects, including: exclusion of lower income groups, allocation of disproportionate amount of disposable income to shelter, acceptance of inadequate housing, and overcrowding.

Under low or medium growth scenarios (Scenarios 1 and 3) where development would be allowed on only some residential lots or lands, land values may become inflated by the artificial shortage. Thus, landowners and investors who are allowed to build and owners of existing housing may benefit enormously from the increased values of their improved property, whereas property owners who are unable to develop their vacant land would lose their investment.

Transportation. Residential and commercial growth brings more people to the basin which further increases the volume of traffic. Traffic generated by residential development can be expected to increase in almost direct proportion to the population increase. Roadways in both the STPUD and DCSID service areas are already so congested that under all growth scenarios, except Scenario 1, traffic conditions are projected to worsen considerably. Congestion interferes with the operation of emergency vehicles and buses, reduces access to business and residential areas, diverts through traffic to local streets, contributes to air and noise pollution, and generally interferes with the appreciation of the environment by visitors and residents.

Recreation. Publicly-owned recreational facilities would be inadequate to meet the needs of users that all scenarios anticipate. Increased visitor demand would require substantial increases in the capacity of privately-owned recreational facilities, particularly for Scenarios 4 and 5. Recreational use may ultimately become so intense however, that recreational quality would be dramatically degraded. Overuse of recreation sites would mean greater noise, less solitude, and damage to the sites themselves.

Public Services/Fiscal Concerns. Under all scenarios, demand for health services would exceed supply, and the resultant overcrowding could reduce quality of care. Under Scenarios 2, 3 and 5 for the Lake Tahoe Unified School District and under Scenarios 3, 4, or 5 for the Douglas County School District, enrollments would exceed districtwide capacity, and additional classrooms and staff would be needed. Growth is likely to require additional personnel and equipment to maintain present levels of law enforcement and fire protection service. Scenarios 4 and 5 especially project substantial increases in basin use by residents and visitors which would impose the greatest service demands. The waste disposal site is adequate to accommodate projected solid waste volumes under all scenarios.

Utilities. Water supply in the basin is controlled by the California-Nevada Interstate Compact which allocates water to the various utility and improvement districts in the basin. Although water supply meets demand adequately now, shortages in STPUD would likely occur under the medium growth scenarios and perhaps under the low growth ones as well. The DCSID would suffer shortages under high growth levels.

Continued residential and commercial development could also require expansion of the energy supply. Under all other scenarios, demand would exceed the installed capacity. Natural gas supplies are currently adequate, but the distribution system is easily subject to disruption. High growth scenarios in the STPUD or DCSID service areas would create natural gas demand exceeding supply.

Cultural Resources. Adverse impacts from urbanization on archaeological or historical sites would be likely under Scenarios 2, 3, and 5, all of which would lead to intensive development on potential culturally sensitive areas.

Upper Carson River Basin Natural Environment

Geology. The Carson Valley is an active geological zone and is subject to periodic earthquakes. Lands near major fault zones are publicly-owned or are zoned for low-density use, but high spillover population under Scenarios 4 or 5 may stimulate intense development in the Jacks Valley area. There, a significant fault runs north through the valley along the base of the Carson Range near Genoa.

Biology. Other impacts of urbanizing the Carson Valley and Alpine County include possible disturbance and damage to areas of primary biological value. These regions include deer wintering areas and migratory corridors, California natural areas, a Nevada State wildlife area, locations of rare or otherwise important species, and wildlife areas in the Carson Range. The possibility of adverse impacts to these environmentally sensitive lands is greatest under scenarios which project high spillover population (Scenarios 4 and 5).

Flood Hazard. High groundwater conditions, a large drainage area, and an extensive floodplain often cause significant flood damage in the Carson Valley. The hazards of flood damage increase in proportion to the degree of development projected within the 100-year floodplain under each growth scenario.

Visual Resources. The degree of impact on visual resources would increase with the level of development. Development of the valley's agricultural and undeveloped land, with a corresponding increase in roadway capacity to serve the additional population, would significantly change the visual character of the basin. Further development in Alpine County, anticipated to be the greatest under Scenarios 4 and 5, would have an adverse visual impact since residentially zoned lands are located along existing roadways. New road construction to serve additional development in Alpine County would also have blighting visual effects.

Upper Carson River Basin Social Environment

The influx of households from the Lake Tahoe Basin, which could increase population levels in Upper Carson River Basin by 22 to 164 percent, are a significant social impact. Alpine County is especially sensitive to spillover because any growth in population would substantially burden its limited fiscal resources and public services.

Housing. Demand for housing is one of the most significant impacts created by spillover population. As in the Lake Tahoe Basin, housing price may come to determine who can and cannot live in Carson Valley. With a strong second-home market and land use policies oriented to large-lot, low-density development, Carson Valley may not be affordable for the spillover population (mostly young, low-income employees). Scenarios 4 and 5 are especially adverse because they project spillover population that would more than double existing population and thus housing demand in the Upper Carson River Basin.

Public Services/Fiscal Concerns. The impact of accommodating the spillover population will be particularly noticeable in the delivery of public services. Under Scenarios 3, 4, and 5 (moderate and high spillover), the already great discrepancy between supply and demand for health care systems would widen further, while quality of care would diminish. The same scenarios would require additional classrooms and staff in schools. Expansion of services would increase dependence on often unpredictable state and federal funding.

The increase in spillover population (particularly under Scenarios 3, 4, and 5) would likely require additional personnel and equipment for law enforcement and fire protection to maintain present levels of service.

In the Carson Valley, fiscal resources (based mainly on gaming revenue) are likely to adequately meet service demands. In Alpine County, new development on any scale would require more fiscal resources than the present tax base can provide.

Utilities. Depletion of the water supply would occur under all growth scenarios without a water rights transfer or a redistribution of current use patterns. Surface water supply is irregular in Carson Valley because it depends on the winter snowpack of the Sierra Nevada, and the stream flows are frequently low during the midsummer and winter months. Agricultural irrigation, which accounts for almost all current water use, is supported by diversions from Carson River and is seriously

affected during low streamflow months. Groundwater supplies are also limited with current use representing over 85 percent of appropriations. The demands for energy, natural gas, and electricity under all scenarios can be satisfied.

Cultural Resources. Known archaeological and historical sites abound in the Upper Carson River Basin, and further sites, particularly archaeological sites, are likely to be found. Thus, the potential is high for indirect adverse impacts on cultural resources from land alteration associated with population growth. Adverse impacts are less likely under Scenarios 1, 2 and 3 and more likely under Scenarios 4 and 5.

RELATIONSHIP OF THE DEIS AND THE FEIS

The DEIS for the wastewater facility programs proposed by STPUD and DCSID was distributed for government agency, organization, and public review in October of 1979. The review and commenting period provided an opportunity for government agencies, as well as private interests, to point out information that was absent, incorrect, or inappropriate. Both written and oral comments were received on the DEIS. Based on a review of the comments received (see Appendix A of this FEIS for a complete inventory of comments submitted), it was decided that revisions to the DEIS were necessary to reflect revised facility plans and developments in the Lake Tahoe Basin that have occurred since the DEIS was released. As a result, the next two chapters are devoted to providing an update of these changes. Chapter III of this document essentially replaces the discussion of wastewater management alternatives of the DEIS, and the discussion of water quality in the Lake Tahoe Basin has been substantially rewritten.

This Final EIS (FEIS) contains the responses to comments on the DEIS, and EPA's recommendations on the proposed wastewater treatment programs and on the mitigation program that is necessary to offset primary and secondary impacts. Appendix A contains copies of all written responses received on the DEIS. (The document can be obtained by completing and sending to EPA, Region IX, the form on page 61.) Appendix B contains the detailed mitigation program, along with implementation statements from the responsible agencies, for minimizing the adverse impacts of the proposed project.

NEPA PROCESS AND STATUS OF THE DISTRICTS' PARTICIPATION

The National Environmental Policy Act (NEPA), which established the EIS process, requires federal agencies to identify measures to mitigate negative environmental impacts resulting directly or indirectly from federally-funded projects. The FEIS contains EPA's mitigation program to insure the protection of the basin's environmental quality. Approval of the proposed projects for grant assistance is contingent upon the district's firm commitment to the mitigation program.

STPUD is actively engaged in securing commitments to the program (see next section and Appendix B of this FEIS). To date EPA has not formally heard from DCSID and Douglas County regarding their participation in the mitigation program. DCSID has in the meantime decided to proceed with some of the modifications specified in the Supplement to the Facility Plan, using its own funds. As a result of these actions, it has been interpreted that the district intends to continue making improvements on its own for the time being. Consequently, the mitigation program described in Appendix B of this FEIS does not involve DCSID. However, any future applications for EPA funding must comply with the state-

issued Water Discharge Permit Compliance Schedule. If the project proposed implies significantly different growth patterns than those described by the project alternatives or scenarios in the DEIS, the district may have to supplement the content and assessment presented in the DEIS. Furthermore, prior to funding any portion of a proposed DCSID project, an Addendum to this FEIS must be prepared that documents DCSID's chosen project alternative(s) and includes a mitigation program to offset adverse primary and secondary environmental effects.

RECOMMENDED GROWTH SCENARIO AND IMPLICATIONS FOR THE PROPOSED WASTEWATER PROJECT

EVALUATION OF ALTERNATIVE GROWTH SCENARIOS

In the Lake Tahoe Basin, further urbanization would have adverse impacts on water quality, high erosion hazard lands, stream environment zones fish and wildlife habitats, air quality, visual quality, traffic circulation, quality of outdoor recreation experience and reliability of energy supply. The growth levels projected under Scenarios 2, 4 and 5, in particular, would impose severe constraints toward protecting this outstanding natural resource. Scenarios 2 and 5 project full buildout of vacant, subdivided land in the STPUD service area, and Scenarios 4 and 5 project full buildout of vacant, subdivided land in the DCSID service area. The highly and extremely adverse impacts associated with these three growth alternatives contravene state and federal mandates to insure that no degradation occurs in Lake Tahoe waters.

They also project further increases in traffic volumes in an area that cannot accommodate them. Road conditions will, consequently, continue to be overcrowded and the basin's air quality standard for carbon monoxide exceeded. Scenarios 2 and 5 project population and economic development that would impose water demands in excess of allocations assumed by the California State Water Resources Control Board in its water rights study. Scenarios 4 and 5 have similar implications for the Nevada portion of the basin. Moreover, Scenarios 4 and 5 project substantial spillover populations which would significantly increase the population, land consumption, and service demand in the Carson Valley and Alpine County portion of the Upper Carson River Basin.

The individual and cumulative effects of Scenarios 2, 4, and 5 are compelling reasons to eliminate these alternatives as realistic futures for the Lake Tahoe Basin. The remaining growth alternatives, Scenarios 1 and 3, allow some development to occur without the far-reaching environmental and public service consequences.

RECOMMENDED GROWTH SCENARIO AND IMPLICATIONS FOR THE STPUD PROPOSED PROJECT

The impact assessment performed in the DEIS clearly demonstrated that the impacts associated with Scenarios 2, 4, and 5 would result in severe environmental consequences for the Lake Tahoe Basin and adjacent Upper Carson River Basin. The remaining growth alternatives, Scenarios 1 and 3, would allow for some growth in the basin but not nearly to the degree suggested by the other scenarios.

Very few adverse impacts were identified for Scenario 1 which is based on low population and economic development. The only areas where highly or extremely adverse impacts were expected relate to property owners' and developers' expectations of developing vacant land and traffic conditions. In contrast, Scenario 3, which is based on moderate population and economic development, could have more serious implications for the natural and social environments of both the Lake Tahoe and Upper Carson River basins. The following areas were identified as having the potential for highly or extremely adverse impacts: development of high erosion hazard lands, development of stream environment zones, increase in persons affected by traffic noise from major roadways, carbon monoxide concentrations, disruption of view corridors, traffic conditions, energy consumption, cultural resources.

The recommended water facility program and growth scenarios must be consistent with the proposed water quality plan for the Lake Tahoe Basin, as well as the air quality nonattainment plan. Both of these plans are recommending strict measures to reduce water quality problems by prohibiting development on high erosion hazard lands and in stream environment zones, and to attain the national ambient air quality standards by implementing a variety of land use and traffic control measures. Consequently, the need to comply with these programs, as well as the mitigation program identified in Appendix B of this FEIS, indicates that the adverse environmental consequences of Scenario 3 can be effectively offset. Given these assurances and weighing the benefits and cost-effectiveness of treatment plant capacity expansion, EPA believes that the level of population growth and economic development associated with Scenario 3 can be accommodated without incurring environmental degradation.

Thus, EPA's preferred growth alternative is Scenario 3 which could allow STPUD to ultimately expand its plant capacity to accommodate a maximum daily flow of 8.7 mgd, if all agency approvals are obtained. However, the Bistate Compact has imposed a temporary development restriction while a new regional plan is prepared. Because the new plan, which will identify the amount of development that can occur in the basin given its natural environmental carrying capacity, will not be completed until 1983, there is uncertainty over the future development potential of the Lake Tahoe Basin. Consequently, EPA will only fund a plant capacity that will accommodate existing flows, plus that generated by the limited development permitted by the Bistate Compact.

The plant capacity is based on the following items:

- current connections,
- reserve capacity by contract,
- connections permitted by the Bistate Compact,
- public projects, and
- changes in use and connections.

Importantly, the plant capacity is based on a sewer unit concept rather than on gallons of wastewater flow. A sewer unit is an alternative means of defining plant capacity and refers to a flow quantity based on the district's experience.

The concept of sewer units is used because:

1. The schedule of sewer units is identified and administered under the provisions of Article IX, Ordinance No. 300, Sewer and Street Lighting Ordinances of the South Tahoe Public Utility District.

2. An empirical formula has been developed that established the relationship between sewer units connected and plant inflow (85 gallons per sewer unit - maximum 7-day average dry weather flow).
3. An empirical formula has been developed for the relationship between sewer units connected and annual discharge of the Alpine County Land Application System (60 to 70 acre-feet/year per 1000 sewer units).
4. NPDES Permit CA 01012709 requires the district to submit at quarterly intervals a report on current connections and remaining capacity. These capacity reports have been developed on the basis of sewer units and provide a record of remaining capacity.

Based on historical records maintained by STPUD, a maximum 7-day average flow of 85 gallons per sewer unit is required to reliably treat present flows. (Over the period 1971 to 1979, the 7-day average flow was less than or equal to 85 gallons per sewer units over 99 percent of the time.) Converted into a maximum daily basis, this corresponds to 93 gallons per sewer unit.*

However, a large portion of the population in the basin is not permanent residents but visitors. The lack of sewage capacity does not prevent visitors from coming to the basin or people from sharing accommodations. In fact, overnight and day use of the south Lake Tahoe area has continued to escalate despite the limitation on new sewer hookups. With no effective controls on day and overnight use of the basin, flows to the plant may continue to grow. Moreover, even permanent populations can increase under a development ban by increasing the number of persons living in each unit. This phenomenon of increasing occupancy rates is occurring as affordable housing becomes increasingly difficult to secure. As a result of this phenomenon, a sewer unit equivalent to maximum daily flows of 96 gallons, rather than 93 gallons, would appear to be a reasonable assumption in determining future capacity requirements.

The project recommended by EPA does not call for an expansion beyond existing capabilities, a maximum daily flow of 7.5 mgd. The facility will be upgraded to insure that the facility can adequately handle the flows permitted by the Bistate Compact (see Table 4). The selected growth alternative does establish the framework for STPUD to expand if agreed upon in the future by the various regulatory and local agencies, and if performance in the mitigation program is deemed satisfactory. Future proposals by STPUD to expand the facility consistent with the recommended Scenario 3 is not likely to require an additional or supplementary EIS by EPA, again, if adequate implementation of the mitigation program occurs.

EPA's recommended wastewater program for STPUD calls for:

- abandonment of the advanced wastewater facilities and modifications to produce secondary treated and filtered effluent;
- a maximum daily plant capacity of 7.5 mgd;

*Assuming a conversion factor of 1.09 based on the STPUD's historical records.

TABLE 4
ESTIMATED SEWAGE TREATMENT PLANT CAPACITY FOR STPUD

Item	Unit Value	Sewer Units	Estimated Flow (mgd)	
			Max. 7-day Avg. 85 GAL/SU	Max. Day 96 GAL/SU
1. Development Allowed 1981 through April 1983 by the Bistate Compact				
A. Residential (588 Units)	3.2 SU/Unit	1882	0.160	0.181
B. Commercial (150,085 Sq. Ft.)	1.47 SU/1000 SF	221	0.019	0.021
2. Public Projects	LS	500	0.043	0.048
3. Changes in Use and Connections* to Sewer Billings 1981-1987	181 SU/YR	1267	0.108	0.122
4. Present Connections (11/6/81)	—	69,907	5.942	6.711
5. Reserve Capacity by Contract	—	—	0.360	0.360
6. Reserve Capacity Retreat Return Flows Emergency Pond	—	—	0.500	—
		73,777	7.132	7.443**

*Over the past three years, the district has undertaken an aggressive program to correct its billing records. During the inspection, it was learned that the number of sewer units upon which existing uses are billed is often understated. This results because of changes in the type of use that require additional sewer units. As a result of the program, the district has added 1,826 more sewer units to its billing records. The conversion of existing structures to more intensive wastewater generators is expected to continue. The district has assumed a figure of 181 sewer units per year. While this amount is less than has been detected during the inspection program, it is not so low that it will severely understate future conversions, nor is it so high that it will require additional treatment plant capacity. The estimate has been reviewed by the Lahontan Regional Water Quality Control Board and is not considered to be unreasonable.

**While it would appear a capacity of only 7.44 mgd is required, the facility was originally designed to handle maximum daily flows up to 7.5 mgd. The proposed project calls for modifying the already existing facilities to function reliably at its original design. Accordingly, the proposed project capacity is for a 7.5 mgd facility.

- an export system of pumping stations and pipelines with the ability to reliably convey filtered secondary effluent to Alpine County;
- an effluent storage reservoir, transport canals, and irrigation systems in Alpine County; and
- future expansion, assuming approval by various regulatory and local agencies and adequate implementation of the mitigation program.

MITIGATION PROGRAM

INTERRELATIONSHIPS AMONG NONATTAINMENT PLAN, WATER QUALITY PLAN, BISTATE COMPACT, AND PROPOSED PROJECT

The Clean Air Act Amendments of 1970 required each state to prepare a State Implementation Plan for the attainment of ambient air standards. The preparation of the plan was the responsibility of the California Air Resources Board (ARB) for California and TRPA for Nevada.

The 1977 amendments to the Clean Air Act required the states to prepare plans which included specific measures for achieving attainment of the standards. Both states designated the basin as a "non-attainment area" for carbon monoxide and oxidants. The designation requires the preparation of a plan to achieve compliance with the air quality standards. In 1979 the ARB Board adopted the Lake Tahoe Basin Nonattainment Plan (for the California side) as a chapter of the State Implementation Plan. Similarly, Nevada adopted its Lake Tahoe Basin NAP (for the Nevada side) in the same year as part of its State Implementation Plan. Both plans are currently pending EPA approval. The NAP is pertinent in terms of suggesting mitigation measures for secondary, indirect growth which may worsen air quality in the basin. Accordingly, the California ARB, which has higher standards than the federal act, is proposing that more stringent mitigation measures be applied for purposes of improving air quality. In August 1980, EPA issued a notice of proposed rulemaking which proposed conditioned approval of the plan and a redesignation of the basin from nonattainment to attainment for oxidants.

The California-Nevada Bistate Compact, approved by both state and later ratified by Congress, includes requirements for various studies which have significant implications for mitigation of identified impacts. The Compact requires establishment of environmental threshold standards and a carrying capacity for the basin based on the most restrictive state or federal standards by June 1982 and for the preparation of the general plan by TRPA by June 1983, based in part on the results of the threshold study.

While the plan is being prepared, a building restriction has been imposed which limits the level of development until 1983. The provisions of the Compact, are obvious for the wastewater agencies: the requested plant modification must be consistent with the development restrictions imposed by the Compact and comply with existing water quality requirements.

The Federal Water Pollution Control Act, in its Section 208, calls for the designation of areas with substantial water quality control problems and the selection for

each area of an organization to conduct a continuing areawide waste treatment management planning process, with plans to be prepared under this process submitted to EPA for approval. The California State Water Resources Control Board has prepared a plan for California, and the Tahoe Regional Planning Agency has prepared a plan for Nevada. California indicated that if improvements were made it would agree to submit the TRPA plan as the regional plan for the basin. The new TRPA governing board created under the Bistate Compact is considering amendments to its Lake Tahoe Basin Water Quality Management Plan and ordinances to satisfy the requirements of both the California State Water Quality Resources Control Board and the Nevada Division of Environmental Protection.

Proposed amendments include restrictions on new subdivisions and development in stream environment zones and high erosion hazard lands and require adherence to land capability coverage controls. Other improvements include enhanced best management practices, offset policies, and other remedial erosion and control practices. The EIS on the 208 plan also proposed a series of mitigation measures which overlapped to some degree with the NAP and with the mitigation measures suggested in the DEIS on this project. Importantly, in order for EPA to approve the proposed project, it must be consistent with the adopted Water Quality Plan. As a consequence, the mitigation program presented in the EIS has been fashioned to comply with water quality measures called for in the California Water Quality Plan, since at present it is more restrictive than the 208 plan.

STPUD MITIGATION PROGRAM

STPUD is being required to mitigate the adverse primary and secondary impacts associated with the level of development anticipated under Scenario 3, the recommended growth alternative. EPA's decision to finalize the EIS on the proposed wastewater project is contingent upon obtaining sufficient agency commitments of dollars and manpower to implement the identified mitigation measures which are designed to minimize and offset the environmental impacts of the proposed action. As noted in the previous section, the mitigation program is largely shaped by other plans and policies that have been formulated since the DEIS was issued. The priorities for mitigation are to protect water quality from the effects of urbanization consistent with the provisions of the Water Quality Management (208) Plan and to attain the national ambient air quality standards for the Lake Tahoe Basin established by the Nonattainment Plan. Major emphasis is placed on protecting stream environment zones, protecting high erosion hazard lands, and strictly adhering to the land capability system as approaches towards preserving the integrity of the lake. Traffic control measures with an emphasis on increased public transit opportunities are a cornerstone in the plans to meet national ambient air quality standards.

A key force in coordinating these various demands for the DEIS, the Bistate Compact, the Lake Tahoe Basin Water Quality Plan, and the Nonattainment Plan has been the Mitigation Task Force, a committee convened to assist in securing commitments to mitigation measures. The Mitigation Task Force committed the majority of 1980 to the review and revision of the mitigation measures suggested in the DEIS.

The role of the Mitigation Task Force is directed towards obtaining the necessary implementation statements from the twenty-eight identified responsible agencies.

The implementation statements must show a firm commitment to execute the mitigation measures. A commitment involves:

- a commitment of financial resources,
- a commitment of staff,
- a commitment of a time schedule for completion, and
- a commitment of achieving certain objectives or milestones.

The revised Mitigation Program along with the agency implementation statements are found in Appendix B of this FEIS.

II. UPDATE OF RECENT EVENTS

Since the Draft Environmental Impact Statement (DEIS) on the wastewater facility programs designed by the South Tahoe Public Utilities District and by the Douglas County Sewer Improvement District #1 was released in October of 1979, numerous events have occurred which alter the complexion of planning and environmental protection in the Lake Tahoe Basin. This initial section describes the major policy decisions and events that have been made and their implications on the proposed projects and the FEIS. The following events are discussed:

- the revised Bistate Compact
- the revised Water Quality Management Plan for the Lake Tahoe Basin (pending)
- Santini-Burton legislation
- California Tahoe Regional Planning Agency's 1980 Regional Plan
- Mitigation Task Force

BISTATE COMPACT

A revised Tahoe Regional Planning Compact was enacted by Congress at the end of 1980. The Bistate Compact between California and Nevada has been amended to redress many of the problems of the earlier compact and to protect the integrity of the Lake Tahoe Basin as a national treasure. The agreement contains provisions to:

- expand the membership of the governing body to fourteen;
- revise the voting procedures to require the vote of at least four of the members of each state agreeing with the vote of at least four members of the other State in order to take action on the regional plan, environmental threshold carrying capacities and ordinances, rules, and regulations;
- revise the voting procedure for project approval to require the affirmative vote of at least five members from the state in which the project is located and the affirmative vote of at least nine members of the governing body;
- restrict expansion of gaming;
- impose a temporary building moratorium;
- limit development to the basin's environmental carrying capacity; and
- create a basinwide special purpose transportation district with authority to own and operate a public transportation system.

The plan establishing the basin's carrying capacity will be prepared over an 18 month period and will determine standards necessary to maintain the significant scenic, recreational, educational, scientific or natural value of the region or to maintain public health and safety within the region. Upon completion, the basin's regional plan will be amended to achieve and maintain the adopted environmental threshold carrying capacities. In turn, each state must approve the regional plan.

In the interim while the carrying capacities are being established, the amount of development is to be limited. The following paragraphs, excerpted from the Compact, define the extent of development that can occur.

"Subject to the limitation provided in this subdivision, from the effective date of the amendments to this compact until the regional plan is amended pursuant to subdivision (c) of Article V, or until May 1, 1983, whichever is earlier:

(1) Except as otherwise provided in this paragraph, no new subdivision, planned unit development, or condominium project may be approved unless a complete tentative map or plan has been approved before the effective date of the amendments to this compact by all agencies having jurisdiction. The subdivision of land owned by a general improvement district, which existed and owned the land before the effective date of the amendments to his compact, may be approved if subdivision of the land is necessary to avoid insolvency of the district.

(2) Except as provided in paragraph (3), no apartment building may be erected unless the required permits for such building have been secured from all agencies having jurisdiction, prior to the effective date of the amendments to this compact.

(3) During each of the calendar years 1980, 1981 and 1982, no city or county may issue building permits which authorize the construction of a greater number of new residential units within the region than were authorized within the region by building permits issued by that city or county during the calendar year 1978. For the period of January through April, 1983, building permits authorizing the construction of no more than one-third of that number may be issued by each such city or county. For purposes of this paragraph a "residential unit" means either a single-family residence or an individual residential unit within a larger building, such as an apartment building, a duplex or a condominium.

The legislatures find the respective numbers of residential units authorized within the region during the calendar year 1978 to be as follows:

1.	City of South Lake Tahoe and El Dorado County (combined)	252
2.	Placer County	278
3.	Carson City	0
4.	Douglas County	339
5.	Washoe County	739

(4) During each of the calendar years 1980, 1981 and 1982, no city or county may issue building permits which authorize construction of a greater square footage of new commercial buildings within the region than were authorized within the region by building permits for commercial purposes issued by that city or county during the calendar year 1978. For the period of January through April, 1983, building permits authorizing the construction of no more than one-third the amount of that square footage may be issued by each such city or county.

The legislatures find the respective square footages of commercial buildings authorized within the region during calendar year 1978 to be as follows:

1.	City of South Lake Tahoe and El Dorado County (combined)	64,324
2.	Placer County	23,000
3.	Carson City	0
4.	Douglas County	57,354
5.	Washoe County	50,600

(5) No structure may be erected to house gaming under a nonrestricted license."

With respect to the proposed wastewater facility programs, the Compact includes specific language:

" (6) No facility for the treatment of sewage may be constructed or enlarged except:

(A) To comply, as ordered by the appropriate state agency for the control of water pollution, with existing limitations of effluent under the Clean Water Act, 33 U.S.C. Section 1251 et seq., and the applicable state law for control of water pollution;

(B) To accommodate development which is not prohibited or limited by this subdivision; or

(C) In the case of Douglas County Sewer District #1, to modify or otherwise alter sewage treatment facilities existing on the effective date of the amendments to this compact so that such facilities will be able to treat the total volume of effluent for which they were originally designed, which is 3.0 million gallons per day. Such modifications or alteration is not a "project"; is not subject to the requirements of Article VII; and does not require a permit from the agency. Before commencing such modification or alteration, however, the district shall submit to the agency its report identifying any significant soil erosion problems which may be caused by such modifications or alterations and the measures which the district proposes to take to mitigate or avoid such problems."

Thus, STPUD may not expand its present facilities, except to accommodate the growth permitted by the Compact. DCSID may alter its facilities to treat the total

volume of effluent for which it was originally designed, 3.0 million gallons per day, maximum monthly flow (the average flow for the peak month), as well as additional flows to accommodate the development permitted by the Bistate Compact. Because of these provisions, both districts have prepared supplementary facility plans which update and revise the earlier ones upon which the DEIS was based. Descriptions of the revised projects are found in Chapter III.

REVISED WATER QUALITY MANAGEMENT PLAN

The following discussion is taken from the Lake Tahoe Basin Water Quality Management Plan Draft Environmental Impact Statement, prepared by the Tahoe Regional Planning Agency.

"TRPA issued a draft 208 plan in 1977 which identified five major types of water quality problems resulting from erosion and surface runoff. To correct these problems the plan recommended controls on development in stream environment zones and on high erosion hazard lands, as well as remedial erosion and runoff control measures. The final "Lake Tahoe Basin Water Quality Management Plan" adopted by the TRPA governing board in 1978 accepted the draft plan's assessment of problems, but eliminated several major control measures, and lacked commitment for enforcement of the remaining controls.

"The state of Nevada conditionally approved the final TRPA 208 plan, but the California State Water Resources Control Board (SWRCB) rejected it for failure to include the control actions and enforcement commitments which it considered necessary to protect Lake Tahoe. The SWRCB further revoked TRPA's designation as the 208 planning agency for the California portion of the Basin and prepared its own plan. The SWRCB has not yet certified its plan to the Environmental Protection Agency, however. In adopting its final "Lake Tahoe Basin Water Quality Plan" in October, 1980, the SWRCB recognized the desirability of the bi-state plan, and recommended specific changes in the TRPA plan which would result in its certification to the Environmental Protection Agency in the place of the SWRCB plan.

"In January, 1981, the newly seated Governing Board of the Tahoe Regional Planning Agency (TRPA) agreed to amend its Lake Tahoe Basin Water Quality Management Plan (208 plan) and implementing ordinances to satisfy the requirements of the California State Water Resources Control Board and Nevada Division of Environmental Protection for certification of the plan for submission to the U.S. Environmental Protection Agency. The proposed amendments would be in effect only until the adoption by TRPA of a new Regional Plan, based on environmental threshold carrying capacities. The revised bi-state Tahoe Regional Planning Compact requires the adoption of an updated Regional Plan by June 19, 1983.

"The proposed amendments to the 208 plan and ordinances include restrictions on new subdivisions and on development of stream environment zone and high erosion hazard lands, and would require adherence to land capability coverage limits where development is

permitted. They also include commitments to begin implementation of a series of remedial erosion and drainage control projects, an offset policy, and recommendations of specific best management practices for control of water quality problems arising from forest practices and related activities."

The proposed Lake Tahoe Water Quality Plan contains many of the mitigation measures identified in the DEIS, and the DEIS has been revised to incorporate the revised evaluation of water quality impacts of development activities. As a result, the two documents are relatively consistent in their assessment of impacts and discussion of mitigation measures. It should be noted that EPA would not proceed with the proposed wastewater facility programs unless they were consistent with the Lake Tahoe Basin Water Quality Management Program.

SANTINI-BURTON LEGISLATION

The Santini-Burton Legislation (HR 7306) would provide, among other things, for the sale of about 9,000 acres of federal urban lands in Nevada. Essentially, the legislation calls for the sale of lands owned by the Bureau of Land Management, mostly around Las Vegas. Three-quarters of the proceeds will be used by the U.S. Forest Service to acquire private tracts of land in environmentally sensitive areas in the Lake Tahoe Basin. (The remaining 25 percent would be made available to the local government for recreational development and to the State of Nevada for educational purposes.) On the California side of the basin, purchases can be for lands either undeveloped or already developed but producing environmental damage. In contrast, on the Nevada side, only undeveloped land can be acquired. Over the next ten years, it is estimated that these sales would provide authority for about \$150 million for acquisition of lands in the Lake Tahoe Basin, thereby increasing federal ownership in the basin from 65 to 80 percent. In addition to providing funds for acquisition of environmentally sensitive lands, the bill provides a potential revenue source to finance the many remedial erosion control projects identified in the Water Quality Management Plan.

CALIFORNIA TAHOE REGIONAL PLANNING AGENCY (CTRPA) 1980 REGIONAL PLAN

The CTRPA 1980 Regional Plan was adopted in November 1980 and sets forth many of the mitigation measures contained in the DEIS. The Plan recommends, among other things:

- a temporary prohibition on development of land capability classes 1, 2, and 3 and stream environment zones;
- an annual allocation of permitted development;
- a closer adherence to allowable lot coverages, as specified by the Land Capability System;
- a mechanism for either the transfer of development credit from fragile lands to higher capability lands, the sale of development rights, or the sale of the lots plus development rights to a state or federal agency; and

- a five-fold increase in transit service and exclusive transit facilities.

However, because CTRPA will no longer be funded after TRPA has adopted new plans and ordinances pursuant to the Bistate Compact, and TRPA is not required to enforce the CTRPA 1980 Regional Plan, the plan should be viewed as a transitional, interim program.

MITIGATION TASK FORCE

EPA's decision on finalizing the EIS on the proposed wastewater project is contingent upon obtaining sufficient agency commitments of dollars and manpower to implement the identified mitigation measures which are designed to minimize and offset the environmental impacts identified for the proposed action.

In order to coordinate the process of securing commitments, STPUD in cooperation with the City of South Lake Tahoe and EL Dorado County formed the Mitigation Task Force in January 1980. This Task Force has been expanded to include various interests within the Lake Tahoe Basin. For a complete list of participants, see Appendix B, Chapter 5, of this FEIS. The initial objective of the Task Force was to establish a working relationship among agencies with authority in the basin and to focus their efforts toward a coordinated, implementable and environmentally sound mitigation program.

The Mitigation Task Force committed the majority of 1980 to the review and revision of the mitigation measures suggested in the DEIS. Upon completion of the revised Mitigation Program in the winter of 1980, the role of the Mitigation Task Force was directed towards obtaining the necessary implementation statements from the twenty-eight identified responsible agencies. The revised Mitigation Program along with the agency implementation statements are found in Appendix B of this FEIS.

In the ongoing effort to support STPUD in the pursuit of the Step Three Construction Grant, the Mitigation Task Force has determined that it will continue to meet monthly over the next year to two years in order to maintain the momentum and consistency towards the monitoring, implementation and coordination of the Mitigation Program.

III. FACILITY PLANS UPDATE

In response to changing conditions and legislation, both STPUD and DCSID have modified their original facility plans. The following discussion summarizes the revisions to the plans, describes each plant's performance in complying with applicable waste discharge requirements, and assesses the implication of not funding the proposed projects.

SOUTH TAHOE PUBLIC UTILITY DISTRICT

BACKGROUND

In California, the Lahontan Regional Water Quality Control Board (RWQCB) is the principal agency responsible for issuing waste discharge requirements under the National Pollutant Discharge Elimination System defined by the Federal Water Pollution Control Act Amendments of 1972 and under California state law. Since initial operations of tertiary treatment facilities in 1968, STPUD has had difficulty in complying with effluent and receiving water quality requirements. This unsatisfactory performance resulted in the issuance of a Cease and Desist Order in April of 1977 by the Regional Water Quality Control Board, Lahontan Region. The purpose of the order was to require STPUD to correct the violations. To ensure compliance, the Regional Board also imposed a partial connection ban on the district. The historical background associated with the operations of STPUD facilities and applicable regulatory requirements are outlined in Table 5. The effluent and receiving water quality requirements under the current NPDES permit are presented in Table 6.

Several wastewater management projects have been completed to improve plant performance and to identify the most cost-effective plan for long-term effluent disposal by STPUD. Each year the district has a panel of consulting engineers review its plant performance and prepare a report on its findings and recommendations for plant improvements. The Panel's Report of October 1980 showed that plant performance has improved, a trend which is evidenced by the decreasing number of violations of effluent and receiving water limitations. Nevertheless, STPUD is experiencing difficulties in maintaining the advanced wastewater treatment facility. The district's preventive maintenance program and maintenance - repair program cannot keep operable many of the outdated treatment units and appurtenances. Failure of these units and appurtenances are becoming more frequent, and replacement parts are no longer available for much of the electrical equipment and for a significant portion of the major appurtenances.

Past plant and export line failures have resulted in sewage spills, some greater than 500,000 gallons. Flows from these sewage spills have polluted the Upper Truckee River, Lake Tahoe, and Grass Lake Creek causing migratory environmental damage. In spite of these infrequent spills, the beneficial uses of the surface and ground waters in the Lake Tahoe Basin have been preserved. The excellent past performance of the STPUD Wastewater Reclamation plant, unfortunately is not transferable to the future. Management and staff can no longer guarantee

TABLE 5
BACKGROUND SUMMARY OF STPUD TREATMENT FACILITIES

<u>Year</u>	<u>Event</u>
1968	STPUD initiated operations of tertiary treatment facilities.
1969	Regional Board issued original NPDES permit. The permit did not specify treatment requirements for nitrogen and phosphorus removal or limitations of pH and nutrient levels in Indian Creek Reservoir (ICR).
1974	STPUD expanded the nitrogen removal system and a new NPDES permit was issued. The new permit specified more stringent effluent and receiving water requirements including pH and nitrogen limits within ICR.
1975-1976	STPUD could not consistently comply with discharge standards. Violations included effluent COD, pH and SS as well as receiving water pH and ammonia.
1977	Regional Board issued a Cease and Desist Order which directed STPUD to improve plant performance. STPUD constructed facilities modifications to improve COD and ammonia nitrogen removal, control effluent pH levels, and improve plant control systems. Additional work included the cleaning of sludge holding tanks and storage ponds, furnace repairs, and the restoration of the flotation thickener.
1978	The Draft Facilities Plan was completed. The report identified the most cost-effective facilities which would support future wastewater flows and assure compliance with treatment and disposal requirements. The recommended alternative involved agricultural reuse of secondary effluent in the Upper Carson River Basin, California.
1979	Regional Board issued the current NPDES permit. Limitations include a maximum inflow of 7 mgd during any 24-hour period. In addition, a schedule for compliance was established for new effluent and receiving water quality requirements.
1980	STPUD initiated Phase I of the Headstart Program. The objective of the upgrading program is to improve treatment reliability and plant operations prior to the final selection and implementation of a recommended alternative. Improvements are common to all viable wastewater management alternatives.

performance reliability of a plant composed of a twenty-one year old secondary mode and a thirteen year old advanced wastewater treatment process. The system reliability is flawed by inadequate emergency standby power, overloaded electrical distribution system, plant obsolescence, severe equipment corrosion-fatigue, and over-crowded conditions in the laboratory, shops and plant. The beneficial uses of the surface and ground waters in the Lake Tahoe Basin will be greatly impaired unless a major renovation of the STPUD wastewater plant is undertaken in the near future.

EXISTING TREATMENT PROCESSES

STPUD's existing wastewater treatment facilities still include many of the original facilities, as well as modifications implemented during the 1977 interim improvements program. In addition, STPUD has initiated facilities construction under the Phase I Headstart Program as recommended in the 1978 Draft Facility Plan. The Headstart program is an interim upgrading program to improve treatment reliability and plant operation. The program is designed to be independent of plant capacity and independent of the wastewater management alternatives being considered in the EIS, unless such a capacity increase is in accordance with the Final EIS at time of its issuance or unless such an increase in capacity is approved by the California Regional Water Quality Control Board, Lahontan Region, and is in accordance with the EIS work product after July 1, 1980. Headstart facilities are being constructed prior to the finalization of a recommended project in an effort to avoid future scheduling delays and resultant inflated costs. Facility modifications are common to all viable wastewater management alternatives and will improve existing plant performance. An overview of the existing treatment processes employed by STPUD is presented in Table 7 and Figure 2. The Phase I Headstart Program is outlined in Table 8.

FACILITIES PLANNING

Draft Facility Plan, 1978

Thirteen wastewater management alternatives for STPUD were developed and evaluated during the completion of the Draft Facility Plan, May 1978. Alternatives for effluent disposal involved discharge locations in several different hydrologic units: the Carson River Basin, American River Basin, and South Tahoe Basin in California, as well as the Carson River Basin in Nevada. Based upon a preliminary screening process, the more viable alternatives were selected for detailed analyses.

1. Discharge of nitrified effluent to ICR.
2. Nitrogen removal and effluent discharge to ICR.
3. Agricultural reuse of secondary effluent in the Carson River Basin, California.
4. Agricultural reuse of secondary effluent in the Carson River Basin, California, in conjunction with a 1 mgd reuse demonstration project in Tahoe Basin.

TABLE 6
NPDES REQUIREMENTS FOR STPUD

Item	1974 Permit	1979 Permit	
EFFLUENT LIMITATIONS			
COD	20 mg/l 45 mg/l	30 mg/l 50 mg/l	30 day average maximum
BOD	3mg/l 10 mg/l	3 mg/l 10 mg/l	30 day average maximum
Total Non-Filtrable Residue	1 mg/l 4 mg/l	- 4 mg/l	30 day average maximum
Total Phosphorus (Effective 11/1/82)	No Limitation 0.2 mg/l 0.5 mg/l	1 mg/l	30 day average 30 day average maximum
Turbidity	3 NTU 10 NTU	3 NTU 10 NTU	30 day average maximum
MBAS	0.3 mg/l 1.0 mg/l	0.3 mg/l 0.5 mg/l	30 day average maximum
Total Coliforms	2.2/100 ml 23/100 ml	2.2/100 ml 23/100 ml	7 consec. samples single sample
Dissolved Oxygen	No Requirement	Adequate	
Trace Elements, Pollutants and Contaminants	No Requirement	Non-Toxic	
Flow	7.5 mgd	No explicit requirement	
GENERAL REQUIREMENTS			
Total flow to the Treatment Facilities	No Requirement	7.0 million gallons in any 24 hour period	
Discharge Sites	No Limitation	Limited to those designated	
Bypass of raw or partially treated effluent or side- streams of treatment	No Limitation	Prohibited	
Flood Protection of Facilities	No Requirement	Protection against the 100 year flood	
Sludge and Ash	No Requirement	Disposal in accordance with Div. 7.5, Cal Wtr Code	
Discharge to Lake Tahoe Hydrologic Unit	No Requirement	Prohibited	
Discharge to Diamond Ditch	No Requirement	Prohibited from 10/15 to 4/1*	
Discharge to Carson River	No Requirement	Prohibited	
Use of Pesticides	No Requirement	Prohibited	

*Exceptions may be granted by Regional Board Executive Officer

Sources: Culp/Wesner/Culp, Technical Appendix for South Tahoe Public Utility District,
Facility Plan Update, December 1980.

TABLE 6 (Continued)

Item	1974 Permit	1979 Permit	
RECEIVING WATER LIMITATIONS (ICR)			
Un-ionized Ammonia	No Requirement	0.25 mg/l	maximum
Total Ammonia	4	No Requirement	30 day average maximum
pH (Effective 11/1/82)	8.3	8.3 6.5 to 8.5	average
MBAS	No Requirement	0.2 mg/l	maximum
Dissolved Oxygen	5.0 mg/l	80% of Saturation	minimum
Taste & Odor in Fish	No Requirement	None Present Due to Discharge	
Floating Materials and Scums	No Requirement	None Present Due to Discharge	
Greases, Waxes and Oils	No Requirement	None Present Due to Discharge	
Aquatic Growths	No Requirement	Free from Nuisance Levels	
Toxic Substances	No Requirement	None Present Due To Discharge	
Odors & Insects	No Requirement	Discharge Shall Not Cause Nuisance Levels	
Total Sulfide	0.1 mg/l	No Requirement	maximum
DISCHARGE LIMITATIONS TO DIAMOND DITCH			
Pesticides	No Requirement	Discharge to Diamond to meet Chap. 15 Title 22 of Cal. Admin. Code	
Foam & Floatables	No Requirement	Prohibited to the extent beneficial uses are impaired	
Suspended Matter	No Requirement	Prohibited to the extent beneficial uses are impaired	
Blue Green Algae	No Requirement	Prohibited to the extent they are detrimental to livestock	
Metals & Trace	No Requirement	Prohibited to the extent they are phytotoxic or detrimental plant life	

Source: Culp/Wesner/Culp, Technical Appendix for South Tahoe Public Utility District,
Facility Plan Update, December 1980.

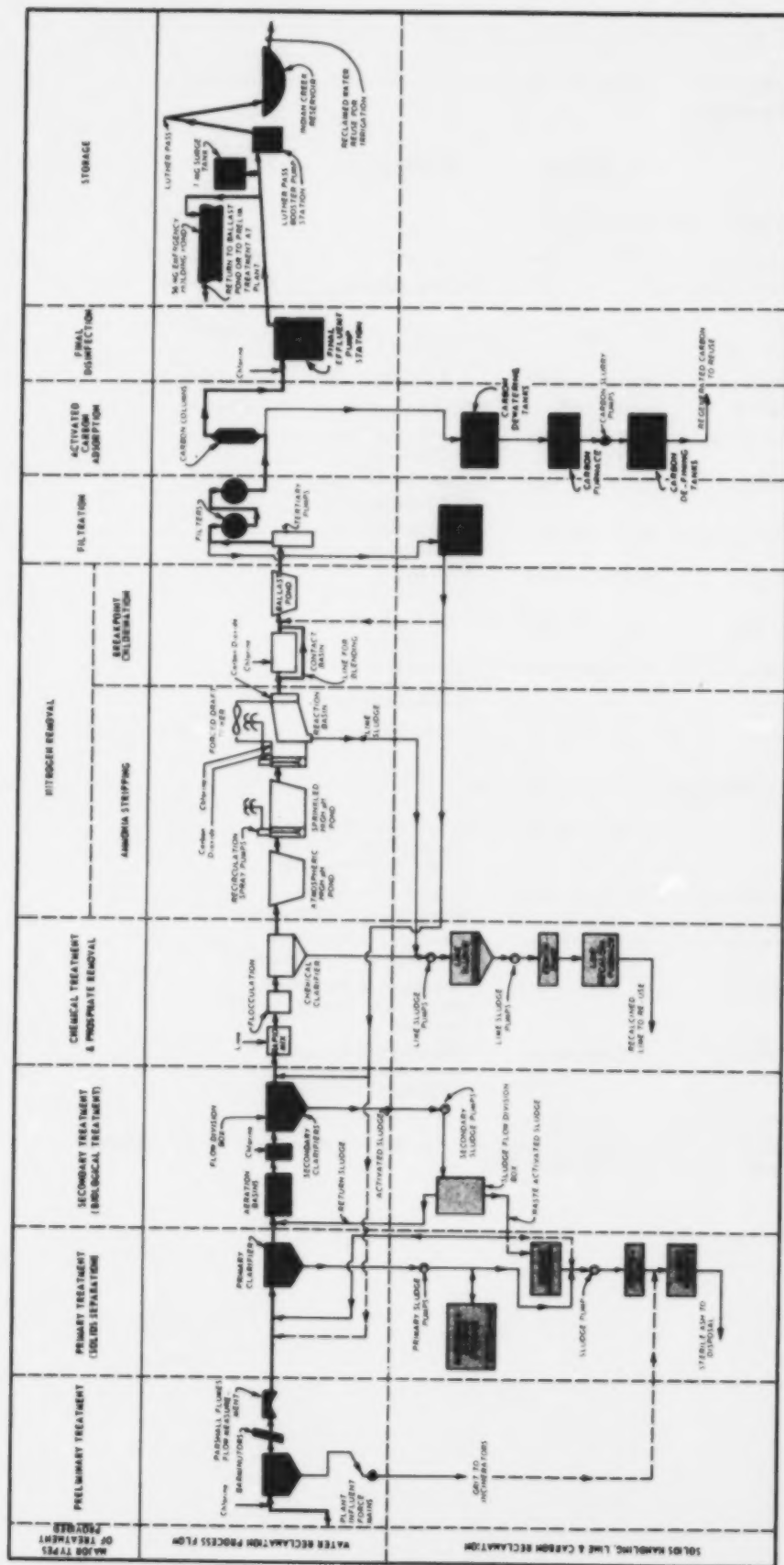


Figure 2
STPUD WASTEWATER RECLAMATION PLANT - SCHEMATIC FLOW DIAGRAM

Source: Culp/Wesner/Culp, Draft Report on Facilities Planning for STPUD, 1978.

TABLE 7
EXISTING STPUD TREATMENT FACILITIES

<u>Process</u>	<u>Major Facilities</u>	<u>Major Function</u>
Preliminary	Grit Building Parshall Flumes Prechlorination/Odor Control Facilities	Remove grit. Shred rags and other solids. Measure influent flow.
Primary (Solids Separation)	Primary Clarifiers	Remove suspended solids, BOD, and scum.
Secondary (Biological Treatment)	Flow Equalization/Aeration Basins Secondary Clarifiers	Remove major portion of biodegradable material through activated sludge process.
Chemical Clarification and Phosphate Removal	Lime Flocculation Basin Chemical Clarifier	Remove phosphorus, suspended solids and COD
Nitrogen Removal	Ammonia Stripping Ponds Breakpoint Chlorination and Dechlorination Facilities	Remove ammonia (NH ₃ -N).
Filtration	Mixed-Media Separation Beds	Remove suspended solids.
Carbon Adsorption	Activated Carbon Columns	Remove soluble organics.

TABLE 8
PHASE I HEADSTART PROGRAM FOR STPUD

<u>Program Element</u>	<u>Purpose</u>
Modify grit chamber inlet. Install three new activated carbon scrubbers.	Provide adequate flow distribution and odor control.
Install two new bar screen cleaners and one new flow measurement element.	Control sludge consistency and feed rate to centrifuges.
Install an engine-driven pump adjacent to the aeration basins.	Provide emergency pumping capabilities of primary effluent to the holding basin.
Relocate chlorination and sulfonation equipment.	Improve storage, feed, and handling control of chlorine and sulfur dioxide solutions.
Construct maintenance and vehicle storage buildings.	Improve routine O&M capabilities.
Install a pump discharge valve system at the effluent pipeline.	Prevent pressure surges from power failures.
Install an emergency return control structure at the Luther Pass pump station.	Improve reliability of the effluent transport system.
Provide a new electrical service.	Relieve near overload conditions and provide capabilities to handle additional electrical loads.

As a result of a comparative evaluation, Alternative No. 3 was identified as the apparent best alternative project. Evaluation criteria included: resource consumption, utilization of existing facilities, reliability, expandability, and ease of implementation.

The recommended alternative as envisioned in the 1978 Facility Plan specifically included upgrading some treatment processes while abandoning most advanced wastewater treatment facilities. Process upgrading would be accomplished through flow equalization and biological treatment with the activated biofilter process. The disinfected secondary effluent would be pumped to an equalization tank at Luther Pass and then delivered to a new effluent reservoir near ICR. Finally, the stored effluent would be used to irrigate farmlands in Alpine County. The recommended alternative involved two potential methods of irrigation: (1) sprinkler irrigation with the center pivot system, and (2) flood irrigation with tailwater control.

Facility Plan Update, 1981

Because of numerous changes in the Lake Tahoe Basin since the facility plan was completed in 1978, the district has prepared a Facility Plan Update that discusses the changes that have occurred and revises the proposed project recommended in the original facility plan. Among the topics covered by the update and the accompanying Technical Appendix are:

- plant reliability during storm events - storage capacity is now inadequate to have a 75 percent assurance of containing untreated flows;
- emergency holding pond capabilities - same as above;
- the 1979 NPDES permit - imposes stricter requirements and compels district to provide storage reservoir in Alpine County;
- remaining plant capacity and plant capacities allowed under the 208 Plan and the Bistate Compact - growth allowed by the Compact closely approximates the remaining capacity of the plant;
- the impact of the CTRPA General Plan;
- the export pipeline capabilities - consideration should be given to increasing reliable capacity; and
- an updated description of the agricultural reuse plan.

Three new alternatives involving effluent reuse for land irrigation in Douglas County, Nevada were investigated based upon a joint dischargers concept developed by James M. Montgomery, Consulting Engineers. The results of a reconnaissance study indicate that desert lands in Nevada could be converted to productive farmlands through effluent reuse. As a result, economic benefits would be realized through increased commerce and tax revenues. In addition, fertilizer costs would be minimized through the application of secondary effluent containing nutrients and phosphorus. However, all the Nevada alternatives involved unique implementation problems. Identified difficulties include the following:

- instituting interstate and inter-agency agreements,
- obtaining simultaneous priorities for grant funds in different states,
- exchange or purchase of California water rights to maintain ICR, and
- local resistance to project acceptance.

RECOMMENDED PROJECT

The recommended alternative as identified in the Facility Plan Update, February 1981, consists of secondary treatment and effluent transport to Alpine County for storage during the winter and agricultural irrigation during the summer. Project elements involving existing facilities include modifications to the wastewater treatment plant and improvements to the export system. Under the proposed plan, the 7.5 mgd (maximum daily flow) treatment plant would produce secondary treated and filtered effluent for reuse. Plant and unit process reliability would be provided to prevent effluent discharge within the Tahoe Basin and to ensure an effluent quality which meets user needs and environmental regulations. Facility modifications to achieve reliability would involve flow equalization, standby units for critical processes, standby chemical treatment, and adequate emergency storage and hydraulic capacity to handle peak flows. Improvements to the export system would include additional surge protection for the low-lift line and a larger pump and motor at the pump station to accommodate diurnal peak flows.

The recommended plan for effluent reuse is a combination of options under Alternative No. 3. Reclamation facilities would consist of an effluent storage reservoir for the non-irrigation season, spray and flood irrigation systems, a diversion canal to redirect Indian Creek around the storage reservoir, and a monitoring system. A storage reservoir with a capacity of 3,844 acre-feet would be constructed on the Heise Property adjacent to Stevens Lake. Irrigation would be conducted on the Heise site as well as on the properties along Diamond Ditch. Both center pivot sprinkler and flood irrigation would be practiced. Table 9 presents a description of the recommended alternative including treatment, export, reclamation, and cost considerations.

Implementation Requirements

The basic effluent disposal concept is to provide storage and transport of secondary effluent for irrigation of pasture, forage crops, and small grains in Alpine County. County ranchers have historically obtained irrigation water through water rights to the West Fork Carson River and its tributaries, including Indian Creek. Water is appropriated through a priority system based upon the original filing date for rights. Users of the Indian Creek watershed have also obtained rights to tailwater resulting from upstream irrigation practices. It has recently been estimated that approximately 38 percent of applied irrigation water runs off. Indian Creek Reservoir was constructed in 1972 on a tributary to Indian Creek. Since that time, owners of the Diamond Ditch have been supplied effluent for irrigation in Diamond Valley.

TABLE 9
RECOMMENDED STPUD PROJECT DESCRIPTION

<u>Item</u>	<u>Description</u>
<u>Wastewater Treatment:</u>	
Grit Chamber	Construct new grit chamber for unit process and plant reliability. Use existing unit as standby.
Primary Clarifier	Construct new primary clarifier as backup to existing No. 2 clarifier. Permit an overhaul of No. 2 and operation of a more acceptable weir loading rate.
Lime System	Modify lime system including cleaning, rehabilitation, repiping and revalving, and conversion of chemical storage and feed to dry lime. Convert chemical clarifiers to secondary clarifiers. The lime system would provide a standby settling aid during biological upsets.
Aeration Basins	Convert existing aeration basins to flow equalization basins. Provide 1.7 mg equalization capacity to reduce peak flows. Construct new biological treatment facilities.
In-Plant Pumping	Construct new in-plant pump station to provide required hydraulic head between unit processes.
Recalcining Furnace	Convert recalcining furnace to organic sludge incinerator. Increase reliability of plant and unit process.
Multi-Media Filtration	Convert filtration process from series to parallel operations.
Sludge Thickening	Modify air flotation thickener to provide required capacity for maximum dry design conditions.
Sludge Pumping	Construct a parallel line from the digesters to the centrifuge feed pump. Existing facilities are subject to clogging.
Emergency Sludge Storage	Construct emergency sludge storage with a capacity of 30 days.
Sludge Dewatering System	Install new dewatering facilities and/or incinerator stack waste heat utilization to eliminate the need for supplemental fuel during normal operations.
Ballast/Storage Ponds	Repair and line existing ponds.
Breakpoint Chlorination	Convert existing breakpoint chlorination system to a system suitable for disinfection.
Raw Wastewater Emergency Storage	Additional emergency storage may be required.
Laboratory and Office	Remodel administration building to provide more space for storage, laboratory testing, improved process control testing and analysis, and office space.
<u>Export System:</u>	
Surge Protection	Install air cushion surge chamber to avoid breaks in the low-lift line from hydraulic surges during power failures.
Effluent Pumping Station	Replace existing small pump and motor with larger unit to accommodate peak flows.
<u>Reclamation Facilities:</u>	
Storage Facilities	Construct Heise Reservoir with a capacity of 3,844 acre-feet to contain non-irrigation effluent flow and runoff. Facilities include piping and valving, fencing, and aerators to eliminate odor problems.
Irrigation Systems	Provide pivot sprinklers and flood irrigation systems. Facilities include 1,500 feet of canal from reservoir to sprinkler pumps, 4,800 gpm sprinkler pump station, and Diamond Ditch renovations.
Diversion Canal	Construct an 8,400-foot canal to divert flow from Indian Creek upstream of Heise Reservoir to ICR. Construct a 6,800-foot canal to divert flow from ICR to Indian Creek downstream of Heise Reservoir.
Monitoring Wells	Construct six monitoring wells for compliance with NPDES requirements.
<u>Costs (at 7.5 mgd)</u>	
Wastewater Treatment Plant	\$15,545,000
Export System	880,000
Reclamation Facilities	6,290,000
Engineering, Administration, and Legal Expenses	3,410,000
Construction Financing	2,270,000
TOTAL CAPITAL COSTS	<u>\$28,395,000</u>

The Technical Appendix to the Facility Plan Update identified several implementation requirements for the basic effluent disposal plan: (1) water rights of downstream users must be protected, (2) delivery of existing flows (1,600 acre-ft/yr) to Diamond Ditch must be continued, and (3) the level and quality of ICR must be maintained. To satisfy the first two conditions, Diamond Valley would be irrigated entirely with effluent to replace water supplies from the West Fork Carson River. Currently, effluent tailwater cannot reenter the West Fork; therefore, downstream users would lose their source of irrigation water. However, these users would be supplied with 38 percent of the replaced freshwater to meet demands normally fulfilled with tailwater. To achieve this exchange, flow from the West Fork would be diverted through ICR to Indian Creek. The specific amount of water available to flush ICR is dependent upon flows in the West Fork. River flows during an average year would satisfy water commitments. As reported in the Technical Appendix, involved ranchers have verbally agreed to this concept.

In addition to the protection of irrigation water rights, ICR must be maintained under the proposed project. Based upon an analysis of seepage loss, evaporation loss, and runoff gain with ICR, approximately 834 acre-feet of supplemental water would be required to maintain suitable pool levels. This additional water supply could be obtained from the West Fork through a water exchange agreement with Heise Land and Livestock Company. Currently, the Heise Company stores irrigation water from the West Fork in Stevens Lake which is located downstream of ICR. Water could be delivered to ICR by gravity through a connecting ditch. The proposed water rights exchange is contingent upon approval by the Federal Court.

Another implementation consideration involves the ownership and control of the irrigated areas. The proposed irrigation sites comprise a considerable portion of privately-owned land in Alpine County. These lands generate significant County revenue through taxes. Therefore, purchase of these lands by STPUD is not feasible due to resultant adverse impacts on the County economy.

Impacts of Land Application

In November 1980, a study was completed by the Soil Conservation Service to identify the impacts of land application of wastewater in Alpine County, California. The results of this study are presented in the following paragraphs:

Soil. With proper soil management to prevent salt build-up, there would be no adverse effects. A site specific analysis must be conducted to determine which ranchers would require conservation practices to avoid erosion and runoff. Applied wastewater could benefit soils with low nutrient levels.

Surface Water. Based upon the assumption that a conservation plan would be implemented on irrigated areas, surface waters would be impacted by runoff. Monitoring of nearby surface waters should be conducted.

Groundwater. The long-term impacts on groundwater cannot be determined without further investigation. A monitoring program should be implemented to determine water quality and groundwater storage conditions. It may be necessary to relocate or deepen some wells to avoid contamination.

Land Use. Land application of wastewater would not significantly impact land use. Some unimproved areas with sagebrush may be converted to permanent pasture.

Fish and Wildlife. Project implementation would have no significant adverse impact on existing fish and wildlife habitats. A minimal amount of wildlife habitat may be converted to permanent pasture.

Visual. Minimal adverse impacts on the natural landscape would be realized by the installation of irrigation systems, signs, fencing, and conservation practices.

Agricultural Industry. Long-term beneficial impacts on the agricultural community would be realized through project implementation. Supplementary water supplies would result in increased crop yields and livestock feed.

Public Health. Any potential long-term impact to public health could be mitigated through the implementation of a well monitoring program and avoidance of human contact with irrigated areas as specified by the California and Alpine County Departments of Health.

No Action Impact. Runoff and erosion problems would continue to occur in existing irrigated areas. Financial burdens and energy expenditures incurred through fertilizer application would not be alleviated. STPUD would experience increased operating costs and energy expenditures. Finally, the water quality and recreational benefits of ICR would continue to deteriorate.

NO PROJECT ALTERNATIVE

The no project alternative is defined as that action which would occur without any federal or state financial assistance. Under this alternative, STPUD could do nothing or choose to implement either all or a portion of the project on its own. Because of state and federal mandates to protect water quality in the basin, STPUD would likely have to make at least some improvements. Such improvements, while no longer under the NEPA or CEQA (California Environmental Quality Act) process, would still have to be in accordance with the Bistate Compact, 208 Plan, Air Quality Nonattainment Plan, and proposed Lake Tahoe Basin Water Quality Plan.

Implications of No Project Alternative

Water Quality

The facilities planning effort which resulted in the proposed project was initiated for two reasons. First, it was anticipated in 1968 that the facilities would require modification in 10 to 15 years. It is now 13 years since the plant began operation. Secondly, the plant was intermittently violating discharge standards, indicating that plant performance and reliability were less than desirable.

Effluent Limitations. Given these conditions, one of the most serious implications of the no project alternative is that the STPUD facility becomes increasingly susceptible to failures and water quality standards violations simply because the

overall system is aging and in need of upgrading. Interim plant modifications, such as those being accomplished with an EPA-funded Headstart Program, improve the situation only temporarily by increasing the system's reliability.

Upon completion of current modifications to existing facilities, the plant would be capable of meeting NPDES requirements with a reasonable degree of short-term reliability; however, continued violations, particularly the pH and dissolved oxygen requirements, would occur under the no project alternative.

In addition, the results of the Phosphorus Removal Study completed by the STPUD staff indicates that the plant will be unable to comply with future phosphorus limitations. Values for total phosphorus have been observed at 1-2 mg/l. Effluent limitations for 1982 specify requirements of a 30-day average of 0.2 mg/l and a maximum of 0.5 mg/l. These values are significantly lower than can be achieved with existing facilities.

Effluent Disposal. Water quality problems associated with existing plant operations principally involve the effluent disposal system. Approximately 50 percent of the NPDES violations in 1980 involved receiving water quality at Indian Creek Reservoir (ICR). High concentrations of free ammonia, high pH levels, and low percent saturation of dissolved oxygen deteriorate the recreational value and fishery resources of ICR. Although 18 pH violations occurred in ICR last year, no pH violations in plant effluent were recorded. Based upon these observations, water quality problems at ICR could continue to occur even when plant effluent quality requirements are achieved. Nevertheless, by 1984 STPUD must fully comply with water quality objectives for ICR specified in the Basin Plan, and this can only be achieved by major construction of treatment facilities. (Ca. Regional Water Quality Control Board, Lahontan Region, staff report for 12/5-6/80 public hearing on revised NPDES permit for STPUD.)

Sewage Capacity

The Bistate Compact effectively precludes the district from expanding the plant capacity until May 1983. The supplemental facility plan amends the district's proposal to expand its plant capacity and proposes, instead, that plant modifications improve plant reliability without increasing the allowable connections above existing capabilities. The critical capacity question, then, deals with the district's ability to reliably serve the growth anticipated in the service district under the Bistate Compact.

Tahoe Regional Planning Compact. The Compact limits the number of new building permits allowed within the El Dorado County portion of the basin* through April 1983.

*Although some of the development permitted in El Dorado County will occur outside of STPUD's service area, for simplicity's sake all of the flows from development permitted in El Dorado County are assumed to be generated within STPUD's boundaries.

<u>Year</u>	<u>Housing Units</u>	<u>Commercial Space (sq. ft.)</u>
1981	252	64,324
1982	252	64,324
1983 (Jan-Apr)	84	21,441

This level of development can be converted into an estimate of wastewater flows using a sewer unit concept. Based on historical flow records, the district has established a sewer unit as 90 gallons of maximum daily flow. Different land use activities are assigned sewer units equivalents; e.g., each housing unit has been determined to generate 3.2 sewer units (or 283 gallons per day). These equivalencies were used to determine sewage treatment plant capacity requirements in the DEIS (see page 200). A similar approach is applied in determining the revised capacity requirements under the Bistate Compact with several important differences. For a variety of reasons including increases in the number of persons per dwelling unit and changes in uses from transient to permanent activities, the number of gallons per sewer unit assumed in the DEIS would probably not insure reliable treatment. Thus, the following computations assume 96 gallons of maximum daily flow per sewer unit. Approximately 0.20 mgd are expected from the development permitted under the Bistate Compact. In addition, the evaluation in the DEIS did not provide for flows from public projects that would be constructed or from changes in land uses that result in greater wastewater generation. Table 10 indicates the sewage capacity requirements for the STPUD facility.

It should be emphasized that required capacities cannot be estimated as an absolute value. Wastewater flow typically varies with changes in political, social, and physical conditions. Climatological patterns, water conservation practices, number of persons per unit, and policy decisions can effectively increase or decrease wastewater flow. For example, the maximum day flow in 1980 was recorded during storm conditions at 7.9 mgd. However, the maximum day dry weather flow was substantially lower at 5.7 mgd. The large discrepancy in observed values between wet and dry weather maximum day flows is indicative of infiltration/inflow (I/I) problems at the plant. STPUD has initiated a corrective program to reduce I/I by approximately 50,000 gpd of flow to the plant. However, without additional improvements to correct I/I problems, plant inflow could exceed 7.5 mgd during periods of heavy precipitation or rapid snow melt.

It appears the present facilities can accommodate the growth permitted by the Bistate Compact. Consequently, the no project alternative would not result in inadequate plant capacity. It would, however, limit the district's ability to function reliably at that capacity.

Cost of Wastewater Treatment

As noted earlier, STPUD will have to undertake facility improvements regardless of the availability of federal financial assistance. The total capital cost is estimated by STPUD to be \$28,395,000. Without government grants, the district would have to issue bonds in order to raise the necessary capital. Assuming the district receives approval to issue the bonds (and they could be sold at 10 percent interest), the debt financing would amount to about \$3.3 million per year. It is projected by STPUD that sewer bills would increase about \$147 per year per single family dwelling. This is in addition to the cost of operation and maintenance of the sewer collection, treatment, and disposal facilities.

TABLE 10
ESTIMATED SEWAGE TREATMENT PLANT CAPACITY FOR STPUD

	<u>Sewer Units</u>	<u>Estimated Flow (mgd)</u>	
		<u>Max. 7-day avg. 85 gals/SU</u>	<u>Max. daily 96 gals/SU</u>
Current Commitments (as of 1/6/81)	69,907	5.942	6.711
Reserve capacity by contract		.360	.360
Other reserve capacity ¹		.500	-
Development permitted by Bistate Compact ²			
Residential (588 units)	1,882	.160	.181
Commercial (150,085 sq.ft.)	221	.019	.021
Public projects ³	500	.043	.048
Changes in use and connections ⁴	1,267	.108	.122
		<u>7.132</u>	<u>7.443</u>

¹The reserve capacity is needed for retreatment of wastewater from the emergency holding pond during periods of sustained high flows. The capacity reflects the difference between the single maximum daily flow and the maximum 7-day average flow. It is not needed when flows are measured on a maximum daily basis.

²Based upon 3.2 sewer units per housing unit and 1.47 sewer units per 1000 square feet of commercial floor space.

³Proposed public projects which are exempt from Compact limitations.

⁴Anticipated changes in use and connections from 1981-1987 which would require additional sewer units. While the estimate of 181 sewer units per year (1,267 until May 1983 when Compact limitations are removed) is less than what the district has experienced over the last 3 years when it undertook an aggressive program to correct its billing records, it is not so low that it will significantly understate future conversions. The estimate has been reviewed by the Lahontan Regional Water Quality Control Board and is not considered to be unreasonable.

In contrast, with grant funding, the local share costs are estimated at about \$6 million which would have an annual bond repayment of about \$0.7 million or \$30 per single family dwelling. The \$30 per year cost would be offset by reduced operating cost, due to the conversion from advanced treatment to filtered secondary treatment.

Secondary Impacts

The secondary impacts relate primarily to the growth-inducing effects, described in detail in the DEIS. In the absence of proposals to expand plant capacity beyond present capabilities, the secondary impacts of the recommended project would not be as detrimental as had been envisioned for Scenarios 2, 3, and 5 for the STPUD service area. In most cases, the indirect effects are less adverse than under the other growth alternatives: less development on environmentally sensitive lands, smaller increase in ambient noise levels, less degradation of visual quality and outdoor recreation experience, and lower demand on public services. For some areas, the environmental consequences of the no project alternative would continue to be significant. For example, air quality will continue to exceed air quality standards and traffic conditions will continue to be congested.

Two other implications of the no project alternative are the impacts on housing availability and economics/fiscal concerns. The availability of sewage capacity has significant implications on the price and availability of housing. Expansion of the capacity of the wastewater treatment plant would not in itself cause development to occur. However, where other forces such as economic opportunities and market conditions favor development, the availability of sewage capacity facilitates development. A limit on sewage capacity, under the same favorable market conditions, would constrain or halt development. Because a limited number of units would be built under the no project alternative, prices and rents of existing units would rise even more rapidly.

The impacts on housing availability and land values resulting from recently enacted legislation that limit development are similar to the no project alternative. Depending on which is the limiting factor, either legislation or sewage capacity constraints could be the cause of spillover and higher land values. If both factors constrain development simultaneously, it is not possible to determine the impact of insufficient sewage capacity alone.

Because DCSID will probably expand its capacity without EPA assistance, once the facilities are built, growth will not be constrained in the Douglas County portion of the basin by lack of treatment capacity. Only when the new STPUD facility is operating near capacity will lack of sewer capacity affect the housing market in the south shore. As long as demand can be met by development in Douglas County, housing prices will not rise because of lack of development under the no project alternative. Once DCSID capacity is reached, housing prices would rise faster than they had when new units could be built. This situation will occur sooner under the no project alternative than under growth scenarios in which STPUD capacity is increased.

Housing price increases because of capacity limits on development would make it increasingly difficult for employees to secure affordable housing. Many will either have to live with others and tolerate potentially overcrowded conditions or seek housing in the Carson Valley, where units are relatively less expensive. To the extent that Douglas County's land use policies would limit development in the Carson Valley, the only real alternative would be to increase the number of individuals living in a unit.

Property owners within STPUD have paid property taxes based on the value of their property to support government services and to repay bonds, including sewer bonds. Many of these properties are still undeveloped, and under the no project alternative a large percentage would remain so. The market value of lots that become permanently undevelopable would decline, and owners of those lots would suffer a financial loss. The county assessor's office would probably reduce assessed values on such properties. Thus, agencies receiving property tax revenues would receive less than they otherwise would have. Total assessed value, however, would probably continue to increase. Offsetting the declines in assessed value of unbuildable lots would be higher assessed values on existing homes that, when they are sold, would sell for higher prices than they otherwise would have.

There would be less employment under the no project alternative than under any of the growth scenarios, but more employment than currently exists. Employment would primarily expand in DCSID where increased sewer capacity will accommodate new development. Some new growth would also occur in STPUD to the extent that excess capacity still remains in the existing system.

DOUGLAS COUNTY SEWER IMPROVEMENT DISTRICT #1

BACKGROUND

In Nevada, the State is responsible for regulating the permit program under the National Pollutant Discharge Elimination System defined by the Federal Water Pollution Control Act Amendments of 1972. In 1977, DCSID No. 1 began to experience difficulties in complying with Discharge Permit conditions. As a part of the Discharge Permit compliance schedule, the district completed the Draft Facility Planning Report in January 1978. Subsequently, a Memorandum of Understanding between the district and the EPA was adopted in August 1978. Under the terms of the Memorandum, further facility planning was to be discontinued until the completion of the comment period for the Draft EIS. In May 1980, the district proceeded with planning efforts at the request of the EPA and completed the Supplement to Draft Facility Planning Report for Wastewater Management in November 1980.

During the period of non-compliance with effluent quality requirements, the EPA and the National Resources Defense Council (NRDC) initiated litigation against the district and the state for an immediate Cease and Desist Order. To improve plant performance, the district then constructed a portion of the facility modifications as recommended in the Draft Facility Plan. Project elements included the addition of a dissolved air flotation unit to improve solids handling, the installation of seven floating aerators in the holding pond to control algae growth, and the implementation of programs to improve source control and efficiently remove oil and grease. Based upon court hearings in May 1979, it was decided that an immediate Cease and Desist was not necessary. However, a Stipulated Judgement was negotiated by involved agencies and entered by court on March 10, 1981. As a result, DCSID No. 1 has agreed to "exercise its best efforts" to construct the following items by October 1, 1983:

1. Install an influent meter to measure total flow.

2. Add a mechanical grit washer to adequately remove grit and other solids.
3. Modify the existing secondary clarifiers to improve skimming capabilities.
4. Add a new secondary clarifier with skimming, scum removal, and sludge drawoff capabilities.
5. Add return-activated sludge pumps with standby capabilities to handle maximum future flows.
6. Add return-activated sludge chlorination system to control growth of filamentous organisms.
7. Add a new centrifuge for standby capability.
8. Add pressure filters to clarify the effluent from the storage reservoir.
9. Add two new pumps at the effluent pump station to provide standby capability.
10. Retain the capability to maintain a daily average DO level of not less than one mg/l in the final aeration basin at a minimum depth of three feet.

EXISTING AND FUTURE DISCHARGE PERMITS

The State of Nevada is in the process of issuing a NPDES permit to the district which specifies current flow limitations and effluent quality requirements. During the winter, effluent discharge to the East Fork Carson River is allowed. However, BOD and suspended solids concentrations are limited to 15 mg/l for a 30-day average. The proposed river discharge permit also specifies the following restrictions for influent flow based upon permit improvements:

<u>Timing</u>	<u>mgd (30-Day Average)</u>
Prior to installation of new filter system	2.5
After filter installation	3.0
Upon completion of all facility modifications	3.32

On July 1, 1983, the effluent quality requirements for river discharge will become more stringent. In order to meet these future requirements, plant improvements would be necessary to achieve advanced wastewater treatment. In addition to new river discharge limitations, strict management requirements for land application of effluent will be enforced:

1. No water may run off onto the Carson River or other properties. Irrigated areas must be equipped with irrigation return ditches. Water must be returned to the existing duck pond or a future reservoir.

2. The irrigation rate may not exceed 2.5 inches per week per acre.
3. Two groundwater monitoring wells are to be established at the irrigation sites. Wells are to be sampled biannually and the results are to be reported to the State Department of Environmental Services.

Effluent quality requirements under the existing and future discharge permits are presented in Table II.

At the outset of the EIS preparation, the district was unable to comply with the State permit requirements. A January 1979 compliance monitoring report by the Surveillance and Analysis Division of the U.S. Environmental Protection Agency, Region IX documented that the district was unable to consistently meet NPDES permit limits, especially for 30-day averages of 15 mg/l for BOD and suspended solids and 7-day averages of 23 mg/l for the same two parameters. Plant performance was evaluated again in March of 1980 by the EPA Surveillance and Analysis Division. The report on DCSID's compliance with the NPDES permit concludes:

1. The district has made a substantial effort at their own expense to implement improvements which were anticipated to bring the plant into compliance with the 15 mg/l limits for BOD and TSS. The results have not yet proven successful for the reasons discussed above. Many of the operational reasons for poor effluent quality have been the result of down times while the system was being modified.
2. The district presently appears capable of meeting less stringent limits when discharging to land (irrigating) but may continue to exceed the more stringent limits (15 mg/l) when they discharge to the river sometime this following winter.
3. Too much reliability is being placed upon the "safety cushion" effect of the effluent storage reservoir.

PLANT CAPACITY

Plant flow characteristics have been updated since the Draft Facility Plan was published to reflect more realistic values based upon current conditions. Existing influent flow characteristics as presented in the Supplement to the Draft Facility Plan are summarized below:

<u>Flow</u>	<u>mgd</u>
Annual Average	1.95
Maximum Month	2.33
Peak Day	2.72

TABLE II

PERMIT REQUIREMENTS FOR DCSID

Effluent Quality Constraints	River Discharge		Land Disposal	
	Present	After July 1, 1983	Present	After July 1, 1983
Suspended Solids	15 mg/l	5 mg/l	30 mg/l	30 mg/l
BOD ₅ (Uninhibited)	15 mg/l	5 mg/l	30 mg/l	30 mg/l
Total Phosphates (PO ₄)	M ¹	0.1 mg/l	—	—
Total Dissolved Solids	M	250 mg/l	—	—
Unionized Ammonia	—	0.02 mg/l	—	—
Nitrates (NO ₃)	M	2 mg/l	—	M
TKN	M	—	—	M
Temperature				
June - September	M	20°C	—	—
October - May	M	14°C ²	—	—
Settleable Solids	0.1 mg/l	—	—	—
Fecal Coliform Bacteria	200 MPN/100 ml	200 MPN/100 ml	200 MPN/100 ml	200 MPN/100 ml
Chlorine Residual	M	0.01 mg/l	—	—
Dissolved Oxygen				
June - September	min. of 7.0 mg/l	min. of 7.0 mg/l	—	—
October - May	min. of 6.0 mg/l	min. of 6.5 mg/l	—	—
pH	Not less than 6.5 Standard Units or greater than 8.5 Standard Units			
Copper ³	—	—	0.02 mg/l	—

¹Some constituents are required to be measured and reported even if there are no limitations set - these are designated with an M.

²Daily Maximum

³Copper analysis is not required if Copper Sulfate has not been used for algae control in the previous four weeks.

All limitations are 30-day averages unless otherwise specified.

SOURCE: Creegan & D'Angelo, Supplement of Draft Facility Planning Report for Wastewater Management, November 1980.

A special session was held in September of 1980 by the Nevada State Legislature to revise the Tahoe Regional Compact. As a result, limitations were imposed upon wastewater facilities construction. Limitations under the new legislation will expire on May 1, 1983 or upon an amendment to the Basin Plan. Based upon their 1983 projections, TRPA approved the construction of plant modifications and expansion to 3.75 mgd for near-term buildout. A summary of plant flow data is presented below. Values are shown as maximum monthly flow (the average flow for the peak month).

	<u>Flow (mgd)</u>
Original Design	3.0
Existing Conditions	2.33
Draft Facility Plan Design	4.8
Recommended Project	3.75

RECOMMENDED PROJECT

The recommended project involves complete land application of effluent by July 1, 1983. Existing wastewater management facilities would be modified to accommodate an average flow of 3 mgd and a maximum monthly flow of 3.75 mgd (4.5 mgd on a maximum daily flow basis). The Settlemeyer Ranch in the West Carson Valley is the recommended land disposal site. The district and Mr. Settlemeyer have approved an agreement which specifies that Mr. Settlemeyer must accept effluent for at least 25 years. In addition, Mr. Settlemeyer has received a permit for the secondary water rights to district effluent.

The ranch is located approximately two miles west of U.S. 395 along Genoa Lane and comprises a total of 1,100 acres. Existing irrigation facilities include ditches for overland flow irrigation, some tailwater return ditches, some laser level fields, and a containment pond for storage. The ranch currently supports a dairy operation including pasture and cropland. A full-scale demonstration project of winter land application is presently being conducted on the Settlemeyer Ranch as approved by the State and EPA. The results of this project will be used to determine the location and extent of the required tailwater return system and storage reservoir. Table 12 presents a description of the recommended project DCSID has estimated that the project cost amounts to \$2,900,000 for plant modifications and expansion and \$1,090,000 for the land application facilities. Figures 3, 4, and 5 illustrate proposed treatment and land disposal facilities.

To date EPA has not formally heard from DCSID and Douglas County regarding their participation in the mitigation program. DCSID has in the meantime decided to proceed with some of the modifications specified in the Supplement to the Facility Plan, using its own funds. As a result of these actions, it has been interpreted that the district intends to continue making improvements on its own for the time being. Consequently, the mitigation program described later in the EIS does not involve DCSID. However, any future applications for EPA funding must comply with the state issued Water Discharge Permit Compliance Schedule and include a program that will mitigate adverse primary and secondary impacts. If the proposed project represents significant changes to the project description contained in Chapter III or to the recommended growth scenario, the district may have to supplement the content and assessment in the DEIS. Prior to funding any portion of

the proposed DCSID project (EPA Project No. C-32-0140), an Addendum to this Final EIS must be prepared that documents the chosen project alternative(s) and the proposed mitigation program. A separate Record of Decision for the DCSID project would be necessary to any grant award.

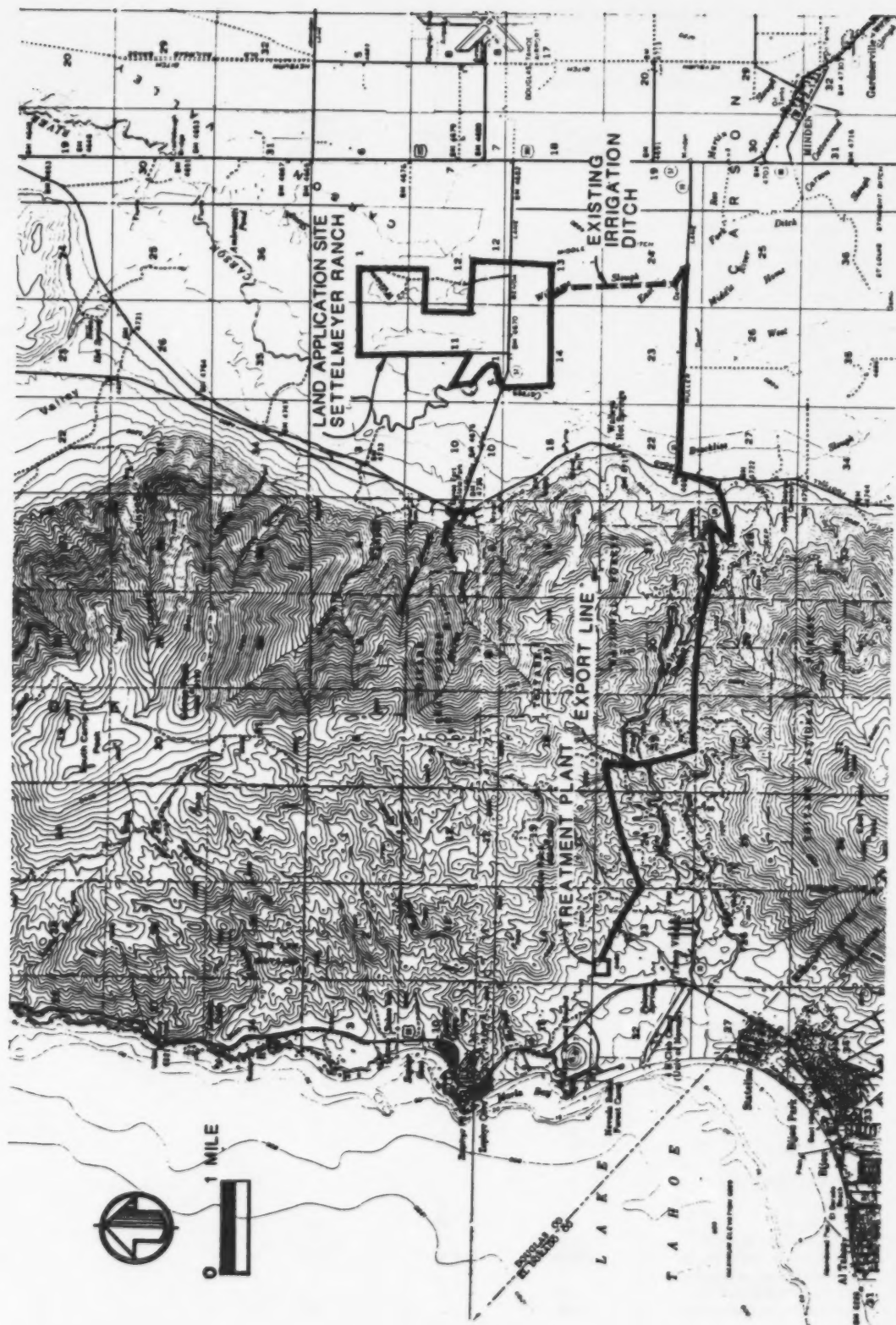


Figure 3
LOCATION MAP FOR DCSID PROPOSED PROJECT

Source: Creegan & D'Angelo, Supplement to the Draft Facility Planning Report for DCSID, 1980.

TABLE 12
RECOMMENDED DCSID PROJECT DESCRIPTION

DESIGN CRITERIA AND UNIT SIZING FOR
RECOMMENDED TREATMENT FACILITIES

<u>Item</u>	<u>Existing Facilities</u>	<u>Proposed Additions</u>	<u>Future Combined Facilities</u>
<u>Flow Data</u>			
Peak Monthly Flow, MGD	2.6	—	3.75
Maximum Daily Flow, MGD	3.1	—	4.5
Influent Concentrations			
BOD, mg/l	500	—	500
SS, mg/l	300	—	300
<u>Influent Meter</u>			
Number	1	1	1
Type	magnetic	sonic	sonic
<u>Comminutor</u>			
Number	1	—	1
<u>Primary Clarifiers</u>			
Number	2	0	2
Diameter, ft.	55	—	—
Sidewater Depth, ft.	10	—	—
Unit Volume, cu.ft.	23,760	—	23,760
Unit Surface Area, sq.ft.	2,376	—	2,376
Detention time, hr.			
At peak monthly flow	3.3	—	2.3
At maximum daily flow	2.8	—	1.9
Overflow Rate, gal/sq.ft./day			
One clarifier in service			
At peak monthly flow	1,094	—	1,578
At maximum daily flow	1,305	—	1,894
<u>Grit Washer</u>			
Number	1	1	1
Type	static degritter	screw degritter	screw degritter
<u>Aeration Basins</u>			
Number	8	0	8
Type of Aeration	Mechanical		
Installed Horsepower	8 @ 25 HP		8 @ 25 HP
Oxygen delivered at Standard Conditions (lbs/day)	16,800	—	16,800
<u>Return Activated Sludge Pumps</u>			
Number	2	2	3 + spare
Total capacity, gpm each	1,000	1,000	1,000
<u>Waste Activated Sludge Pump</u>			
Number	0	1	1
Capacity, gpm	—	230	230
<u>Secondary Scum Pump</u>			
Number	0	1	1
Capacity, gpm	—	70	70
<u>Secondary Clarifiers</u>			
Number	2	1	3
Diameter, ft.	50	50	50
Side Water Depth, ft.	8.5	12	8.5 & 12
Total Surface Area, sq. ft.	3,928	1,964	5,962
Overflow Rate, gal/sq.ft./day			
At Peak Monthly Flow	662	—	636
At Maximum Daily Flow	789	—	768

Table 12 (Continued)

<u>Item</u>	<u>Existing Facilities</u>	<u>Proposed Additions</u>	<u>Future Combined Facilities</u>
<u>Aerated Lagoon</u>			
Surface Area, acres	6	—	6
Number of Floating Aerators	7	—	7
Total Installed Horsepower	105	—	105
Oxygen delivered at Standard Conditions (lbs/day)	8,820		8,820
<u>Effluent Pressure Filter</u>			
Number	0	6	6
Total Surface Area, sq.ft.	0	768	768
Loading Rate, gpm/sq.ft.			
3.0 MGD pumping rate	0	4	4
4.5 MGD pumping rate	0	6	6
<u>Dissolved Air Flotation Thickener</u>			
Number of Units	1	—	1
Surface Area, sq.ft.	250	—	250
Solids Loading, lbs/sq.ft./hr			
At Average Loading, 8 hrs/day	1.68	—	2.25
At Peak Loading, 8 hrs/day	2.52	—	3.38
<u>Sludge Blending Tank</u>			
Number of Units	1	—	1
Diameter, ft.	20	—	20
Sidewater, depth, ft.	20	—	20
Volume, gallons	42,300	—	42,300
Number of Mixers	1 @ 15 HP	—	1 @ 15 HP
<u>Centrifuges</u>			
Number of Units	1	1	1 + 1 Spare
Horsepower per unit	30	30	—
<u>Incinerator</u>			
Number of Units	1	—	1
Rating, lbs/hr	470	—	470
<u>Chlorinators</u>			
Number of Units	2	1	2
Capacity, lbs/day	400	—	400
<u>Effluent Pumping Station</u>			
<u>Reservoir Facilities</u>			
Number of Pumps	1 + 1 spare	1	2 + 1 spare
Capacity, MGD	1.5 - 5.5		1.5 - 7.2
<u>Export Facility</u>			
Number of Pumps	3	1	4
Capacity, MGD	1.6 - 2.75		1.6 - 3.75

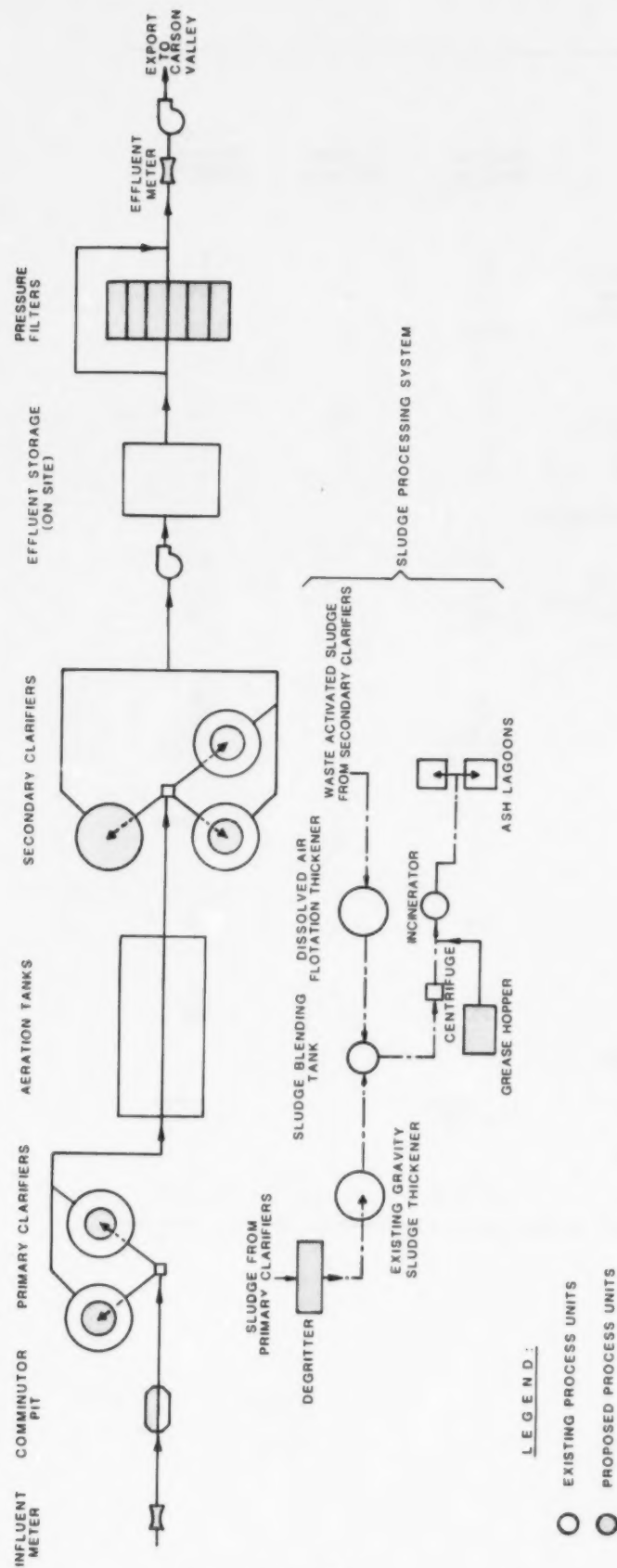


Figure 4
PROPOSED NEW DCSID FACILITIES - PROCESS SCHEMATIC

Source: Creegan & D'Angelo, Supplement to the Draft Facility Planning Report for DCSID, 1980.

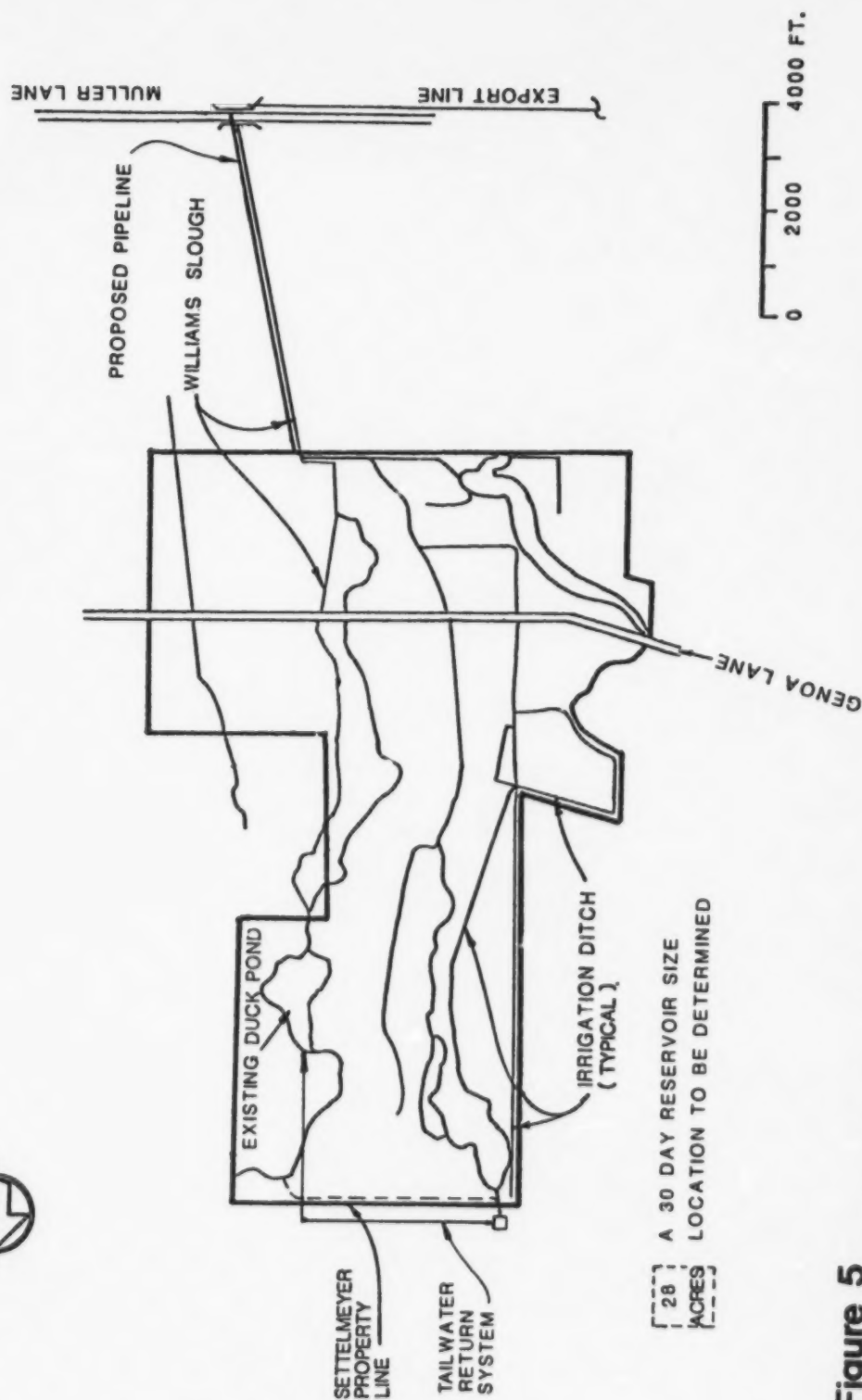


Figure 5
THE SETTELMEYER RANCH WITH PROPOSED IMPROVEMENTS

Source: Creegan & D'Angelo, Supplement to the Draft Facility Planning Report for DC5ID, 1980.

IV. RESPONSES TO COMMENTS ON DEIS

A. INTRODUCTION

Throughout the EIS process, there has been close coordination between EPA and a technical advisory committee composed of local, regional, state, and federal officials. Several public workshops, in addition to meetings with the technical advisory committee, were specifically designed to encourage and elicit public participation during preparation of the DEIS.

Over 500 copies of the DEIS were printed for distribution to a list of interested individuals and agencies. Additional copies were distributed to a number of libraries including:

- | | |
|---|--|
| - Sierra Tahoe Regional
Resource Library
Capitol Complex, Carson City, NV | - Alpine County Library
Markleeville, CA |
| - El Dorado County Library
South Lake Tahoe, CA | - Lake Tahoe Branch Library
Stateline, NV |
| - Douglas County Library
Minden, NV | - Sacramento Main Library
Sacramento, CA |

As part of the EIS process, public hearings were held in January of 1980 to receive comments on the DEIS. The meetings were held in the following locations to insure widespread discussion and participation:

- | | |
|--------------------|--|
| - January 21, 1980 | Federal Building
Sacramento, CA |
| - January 22, 1980 | Douglas County Library
Minden, NV |
| - January 23, 1980 | Turtle Rock Park
Markleeville, CA |
| - January 24, 1980 | Lake Tahoe Unified School District
South Lake Tahoe, CA |

Transcripts of the hearings were prepared and are available for review at EPA, Region IX, 215 Fremont Street, San Francisco, California, and at STPUD's offices in South Lake Tahoe, California. The public testimony received at the public hearings, along with the written comments received during the commenting period, have been summarized and are addressed in this chapter.

Responses have been prepared and organized in a fashion generally paralleling the organization of the DEIS. Comments submitted on the "Summary" are addressed in the relevant section of the DEIS. Revisions to text in the DEIS are indicated by a ● in the margin.

Table 13 indicates the individuals and agencies who offered verbal comments at the public hearings and Table 14 identifies those who submitted written comments. A complete set of the written comments is contained in Appendix A of this FEIS. Anybody wishing to receive the comments is encouraged to tear-out and mail the request form on page 61.

TABLE 13

LIST OF INDIVIDUAL(S)/AGENCY(S) SUBMITTING VERBAL COMMENTS
ON THE DEIS

Sacramento, California

1. Joseph J. Brecher, Attorney at Law, League to Save Lake Tahoe
2. James R. Cofer, Manager/Engineer, South Tahoe Public Utility District
3. Michael Kelley, Sugarloaf Tree Farms, Kyburz, California
4. William J. Miller, Vice Chairman, California Resources Agency
5. Stephen E. Oliva, Assistant to the Secretary, California Resources Agency
6. Stan Randolph, Manager - Tahoe Unit, Air Resources Board
7. Michael J. Seaman, Sacramento, California
8. Robert D. Skidmore, Chief, Department of Transportation

Minden, Nevada

1. Lester H. Berkson, Attorney at Law, Zephyr Cove, Nevada
2. Ken Kjer, County Commissioner, Douglas County

Markleeville, California

1. Tom Abbett, Bureau of Land Management, Nevada
2. Miles L. Celio, Markleeville, California
3. James Cofer, Manager/Engineer, South Tahoe Public Utility District
4. Dean McKinley, Old Dangberg Sheep Camp, Hope Valley, California.
5. Worth J. Moll, Markleeville, California.
6. Wilton Neddenriep, Supervisor, Alpine County
7. Robert Pruett, Douglas County Sewer Improvement District No. 1

South Lake Tahoe, California

1. James R. Cofer, Manager/Engineer, South Tahoe Public Utility District
 2. David T. Dubbink, Executive Officer, California Tahoe Regional Planning Agency
 3. W.F. "Bill" Huss, Attorney at Law, Douglas County Sewer Improvement District No. 1
 4. James R. Jones, Director, South Tahoe Public Utility District
 5. Richard Milbrodt, City Manager, South Lake Tahoe
 6. Ronald Nahas, Glenbrook Properties, Nevada
 7. John M. Reily, Tahoe City, California
 8. Tom Smallwood, South Lake Tahoe Board of Realtors
 9. Kenneth C. Smith, M.D., Lake Tahoe Audubon Society
 10. Jere E. Williams, Douglas County Sewer Improvement District No. 1
-

TABLE 14

LIST OF INDIVIDUAL(S)/AGENCY(S) SUBMITTING WRITTEN COMMENTS
ON THE DEIS

1. U.S. Department of Agriculture, Soil Conservation Service (USDA, SCS) Reno, NV
 2. Nevada Division of State Parks (NDSP)
 3. Nevada Environmental Action Trust (NEAT)
 4. California Department of Transportation (Caltrans)
 5. U.S. Department of Interior (USDI)
 6. Lake Tahoe Unified School District (LTUSD)
 7. Carson River Basin Council of Governments (CRBCOG)
 8. South Tahoe Public Utility District (STPUD)
 9. California Department of Forestry (CDF)
 10. Neva Roberts
 11. California Tahoe Regional Planning Agency (CTRPA)
 12. Advisory Council on Historic Preservation
 13. California State Lands Commission
 14. Barbara Annoni
 15. U.S. Department of Agriculture, Soil Conservation Service (SCS), Davis CA
 16. Glenbrook Properties
 17. Friends of Alpine
 18. California Regional Water Quality Control Board - Lahontan (LRWQCB)
 19. Raymond Smith, RMS Inc.
 20. Joseph Brecher
 - 21.+22. Tahoe Regional Planning Agency (TRPA)
 23. U.S. Department of Interior - Interagency Archaeological Services (USDI-IAS)
 24. U.S. Fish and Wildlife Service - Endangered Species Office
 25. California Resources Agency (Resources Agency), Department of Fish and Game, Lahontan Regional Water Quality Control Board (LRWQCB), Air Resources Board (ARB), State Lands Commission, Department of Transportation (Caltrans), Department of Water Resources (DWR), Department of Forestry
 26. Round Hill General Improvement District
 27. David Moser
 28. Douglas County Planning Department (DCPD) and Douglas County Board of Commissioners
 29. City of South Lake Tahoe (SLT)
 30. Lake Tahoe Audubon Society
 31. Tahoe Resource Conservation District
 32. League to Save Lake Tahoe (LTSLT)
 33. Citizens of South Lake Tahoe
 34. U.S. Department of Agriculture, Forest Service (USFS)
 35. Nevada Division of Environmental Protection (NDEP)
 36. Nevada Division of Environmental Protection (NDEP)
 37. Natural Resources Defense Council, Inc. (NRDC)
 38. Paul W. O'Rear
 39. George Drake
 40. California Office of Planning and Research (OPR)
 41. California Water Resources Control Board (SWRCB)
-

**FINAL ENVIRONMENTAL IMPACT STATEMENT:
SOUTH LAKE TAHOE PUBLIC UTILITY DISTRICT
AND DOUGLAS COUNTY SEWER IMPROVEMENT DISTRICT NO. 1
WASTEWATER TREATMENT FACILITIES**

APPENDIX A REQUEST FORM

Please send me a copy of Appendix A, which contains a complete set of the written comments submitted on the Draft EIS, issued in October 1979.

Name: _____

Address: _____

For your copy, send this request form to:

Mr. Mark Zuckerman
U.S. Environmental Protection Agency
215 Fremont Street
San Francisco, California 94105

B. RESPONSES TO COMMENTS ON PROJECT DESCRIPTIONS AND ALTERNATIVES

GENERAL OVERALL COMMENTS

Comment: The EIS lacks clarity; the main report, technical appendix, and summary are not coordinated; and there is a general lack of technical substantiation. (CTRPA)

Response: The EIS is organized following the format recommended by the Council on Environmental Quality Guidelines with emphasis on secondary impacts that address a wide range of issues. Many of these issues could not always be fully addressed in the body of the EIS. Because the background information and analysis are useful in understanding the material in the report, a series of technical appendices was prepared.

The data used in the DEIS and its Technical Appendices were the best available at the time the documents were prepared. A Technical Advisory Committee, comprised of public officials in the Lake Tahoe Basin, was created early in the preparation of the EIS to review and comment on the accuracy of the information and the validity of the assumptions.

Comment: The report's approach is essentially negative and does not address any good outcome of the proposals. (Raymond Smith)

Response: The DEIS identifies both adverse and beneficial secondary impacts of the proposed projects. These effects are summarized beginning on page 10 of the FEIS. The discussion in Chapter III of this document elaborates upon the beneficial aspects of the proposed wastewater projects of the DEIS. The mitigation program that is evolving under the guidance of the Mitigation Task Force is an excellent opportunity to coordinate efforts in the basin to improve environmental quality.

Comment: Report attempts to create EPA as dominant authority in the Tahoe Basin. (Raymond Smith)

Response: EPA is certainly not attempting to become the dominant authority in the basin. EPA's only goal is to protect the natural environment of the basin with their regulatory powers. The Agency's intent with respect to the proposed action is to prevent the quality of the basin's waters from diminishing. Towards these ends, EPA prepared the EIS to determine the secondary impacts of the projects if implemented and is participating with the Mitigation Task Force. EPA's role, as envisioned by the Mitigation Task Force and by the Water Quality Plan, is to provide funding, to offer technical assistance, and to coordinate activities by other federal agencies as they relate to air and water quality.

Comment: There is a lack of coordination between the EIS and other reports such as the Water Quality Management Plan, the Federal Environmental Assessment, and the Nonattainment Plan. (OPR, Brecher)

Response: At the outset of the DEIS preparation, only the Nonattainment Plan was in the process of being prepared. Several meetings were held between EPA and the Ad Hoc Committee on air quality in an effort to coordinate work. Similar meetings and discussions were held once the Federal Environmental Assessment and the Water Quality Plan got underway. The DEIS noted that these projects were being developed, and, importantly, that approval of the proposed actions would be conditioned upon consistency with the Nonattainment and Water Quality Plans. As the proposed plan are now available, the Final EIS has been amended to incorporate new information. In addition, the mitigation measures proposed reflect the findings of these reports.

Comment: The propriety of discussing and funding a project (STPUD's proposed action) that will lead to growth in the Lake Tahoe Basin is questioned. (OPR, Friends of Alpine, Ca. Resources Agency)

Response: EPA undertook the EIS to determine the growth impacts of the proposed project. To have dismissed the project prior to the analysis would have been premature and precluded full disclosure of the environmental consequences of the proposed action. The analysis revealed that there are indeed serious environmental consequences of approving the project, as originally proposed in the Draft Facility Plan of May 1978. The process of securing commitments to mitigations has been directed towards offsetting the identified adverse impacts. If it is determined by EPA's Regional Administrator that the mitigation program does not adequately eliminate or reduce the environmental effects of the recommended project and growth scenarios, then the project will not receive approval for grant assistance.

It should be noted, STPUD is no longer seeking a capacity expansion. The Facility Plan Update, dated February 1981, takes into account the growth limitations imposed by the Bistate Compact and recognizes that the remaining plant capacity matches that permitted by the Bistate Compact. For a more complete discussion see the revised project description in Chapter III.

INTRODUCTION (pages 19-20)

Comment: STPUD is not limited to the number of new sewer hook-ups by the Regional Water Quality Control Board; the restriction is self-imposed. Recent Regional Board actions should be discussed. (page 19) (SLT, LRWQCB)

Response: Cease and Desist Order No. 6-77-51, issued April 26, 1977 contained provisions referring to a partial connection ban and were in effect at the time the DEIS was being prepared. Amendments to the original order did permit additional connections. As pointed out by the City, the connection ban was lifted in 1979 when the STPUD had demonstrated a record of consistent compliance and was self-limiting additional connections to assure continued compliance.

A revised discussion of plant performance and the NPDES permit is provided in Chapter III.

Comment: NEPA requires consideration of all effects. Discussion cannot be limited to indirect effects, nor exclude effects on traffic and air quality. (page 19) (CTRPA)

Response: The direct effects of the proposed projects were addressed in the respective environmental assessments. A summary of those effects is provided in the DEIS, starting on page 62. Traffic effects are discussed beginning on page 168 for the Lake Tahoe Basin and on page 259 for the Upper Carson River Basin. Air quality effects are discussed beginning on page 127 for the Lake Tahoe Basin and on page 242 for the Upper Carson River Basin.

Comment: NEPA requires an identification of the environmental goals to be addressed. Other goals should be included. (page 20) (CTRPA, LRWQCB, Lake Tahoe Audubon Society, Brecher)

Response: The following environmental goals are added to the list of goals on page 20: encourage improved circulation and mobility into and around the basin and assure that land use and development are consistent with protection of the Lake Tahoe environment. The protection of water quality, in accord with the nondegradation policies and with the Water Quality Plan prepared for the basin are not specifically identified but should be added to elaborate upon the first goal concerning water resources and quality.

Comment: It appears EPA and the Regional Water Quality Control Board are recommending conflicting courses of action: EPA to assure compliance with discharge requirements by expanding capacity and the Regional Water Quality Control Board by opposing development. (Brecher)

Response: Both the EPA and State Water Resources Control Board have the goal of protecting water quality in the Lake Tahoe Basin. The primary means have been through the enforcement of water quality standards designed to protect the beneficial uses of the water resources. The proposed project by STPUD seeks to improve the reliability of the system in order to comply with the water quality standards. EPA would not proceed with the proposed facilities unless the plan were

certified by the State Water Resources Control Board and was consistent with the Bistate Compact. At this time the Regional Water Quality Control Board is in support of the chosen alternative which does not include plant expansion.

GROWTH SCENARIOS

IMPACT ASSESSMENT METHODOLOGY (pages 21-38)

Comment: Alternatives that consider serving only existing service commitments should be considered and the impacts discussed. Indirect impacts of the preferred alternatives of the sewer districts are not addressed. The DEIS examines capacities that are not even being proposed by the districts. Also, the method of assessing impacts does not indicate when certain environmental, social, and infrastructure thresholds are exceeded, but employs an arbitrary rating system. (CTRPA, Caltrans, Resources Agency, LRWQCB, DCPD, Ca. State Lands Commission, Natural Resources Defense Council, Brecher, Roberts, Raymond Smith)

Response: Initially, it was hoped that the DEIS would be able to say how many more persons could be accommodated in the basin as a result of the proposed treatment plant capacity expansions. This population increase would then serve as the basis to assess impacts. Given a conventional relationship between households and wastewater flows, this approach is used quite frequently in the preparation of impact assessments. However, a number of conditions peculiar to the basin prevent a reliance on these conventional relationships between flows and households. The fact that the basin is a tourist resort means flows treated at the treatment plants are much higher than would be expected if the service area were to have a steady, stable resident population. Another well known phenomenon in the basin is that of increasing occupancy rates. In most communities, the average number of persons per households makes it relatively easy to forecast population. In the Lake Tahoe Basin, the observation has been made that the number of people in each dwelling unit is variable and is increasing. Consequently, under normal situations a given treatment plant capacity would indeed lend itself to an estimate of the number of households. In the basin, those same standards would probably undercount the number of people likely to be in the basin at any one time. These issues were discussed with the Technical Advisory Committee, a group of public officials from local, regional, state, and federal agencies, created to provide technical input and review materials prepared by EPA. Because there was no definitive way of determining what could be accommodated by a given capacity increase, the Technical Advisory Committee concurred with EPA that the DEIS should not use the capacity alternatives to develop scenarios and the impact assessment should be approached from a different perspective.

The approach adopted instead sought to combine different assumptions affecting growth in the basin. The assumptions concentrated on economic development and land use policies, although other factors were considered. The concept was to create a set of growth forecasts, or scenarios, that would encompass the range of feasible development futures. Thus, it would cover a low growth future reflecting minimal housing development and no casino expansion, as well as buildout of the basin and major expansion of casino activities.

Environmental considerations were treated as impacts of a particular scenario rather than as an input to the scenario formulation. One of the reasons for adopting this position was because the Water Quality Management (208) Plan was being revised and the Nonattainment Plan was still in preparation. Because these documents (which in fact establish environmental standards with growth implications) were still in preparation, it was impossible to say how they would affect

development in the basin. Thus, existing land use policies as expressed by the TRPA and CTRPA plans and ordinances provided the basic input for how much and where development could occur. It should be realized that environmental concerns are reflected in the land use policies. If serious environmental impacts were associated with a given scenario, the DEIS so stated and indicated the critical implications.

The basis of determining whether an impact was serious relied on the identification of a well accepted standard, or criterion. Where possible, impacts were quantified and compared against established criteria, such as air quality standards, noise levels, and roadway capacities. The standards are defined either in the discussion of existing conditions or in the discussion following the impact assessment table. Oftentimes, standards did not exist or the impacts could not be quantified with a reasonable degree of accuracy. In these instances, a qualitative assesment was provided to indicate the relative severity of an impact. The assessment descriptors, low through extreme, represent a judgment on the degree of impact. Certainly, there may be impacts that appear arbitrary or unsubstantiated; however the ratings were based on assumptions that are made explicit in the discussion following the impact assessment table.

Given the range of development forecasts, the demand for various public services, including wastewater treatment, could be determined. The assumptions used to determine required treatment capacities were taken from the facility plans provided by the respective wastewater agencies. It was expected that the capacity expansion proposed by the districts would fall somewhere within the range of capacities determined to be necessary to satisfy the full range of scenarios-- and this is what happened, although not precisely. Scenarios 2 and 5 project STPUD to have a 10 mgd maximum day plant which was consistent with the district's original proposal. Similarly, the 4.61 mgd maximum day proposed for DCSID corresponds to Scenario 3. (The facility plan calls for a 3.0 mgd average annual capacity which translates into a 4.8 mgd maximum day plant.) A common concern among commenting agencies was that a 10 mgd plant for STPUD or a 6.6 mgd plant for DCSID, for example, prematurely assume plant expansion. In contrast, the DEIS treats wastewater capacity requirements as an outcome of different assumptions on land use and economic development. This approach allowed the range of impacts that could be associated with a given plant expansion to be assessed. The proposals by the districts (10 mgd maximum daily flow at STPUD and 4.8 mgd maximum daily flow at DCSID) suggest the impacts would be more significant than projected under Scenario 3 but less so than Scenario 5.

Comment: In the Tahoe Basin, the DEIS analysis takes the worst-case assumptions, yet in the Carson Valley the DEIS seems to use data that underestimates impacts. It appears that the EPA is establishing a case to direct growth to the Carson Valley. (DCPD)

Response: The methodology to define growth scenarios considered a wide range of assumptions for future development in the basin. The consequences of these "possible futures" naturally had varying impacts on Carson Valley--from insignificant to extreme. The degree of impact on Carson Valley is related to the ability of the Lake Tahoe Basin to accommodate the growth generated there. EPA is not recommending that growth should occur in the Carson Valley, rather that increased growth is a possible result of activities in the basin.

GROWTH SCENARIOS ASSUMPTIONS (pages 21-38)

Comment: Limitation of sewer capacity will not control growth. Population will increase due to increased occupancy rates with resultant flows to the sewer plant. (STPUD, SLT, Citizens of South Lake Tahoe, Huss, Nahas)

Response: The argument made by the district and the City of South Lake Tahoe that growth will continue in spite of sewer capacity limitations is valid and is a phenomenon mentioned in the assessment of wastewater treatment needs (page 201 of the DEIS). The assumption made in the DEIS is that additional sewer capacity will accommodate or allow further development. Inadequate sewer capacity, in contrast, slows the construction of new development and therefore moderates some growth that could have occurred if capacity were available. EPA does not disagree with STPUD nor the city, but recognizes that excess sewer capacity can facilitate additional growth.

Comment: The high vacancy factor and significant infiltration problems upset the relationship between employment, housing and wastewater flows. (CTRPA)

Response: The relationship between employment, housing and wastewater flows was based on observed relationships in the Lake Tahoe economy, not standard relationships found in non-seasonal economies. Relationships between housing and employment, as reflected in the growth scenarios, were based on historical relationships in Lake Tahoe. Corresponding wastewater flows were computed using data from STPUD and DCSID and based on maximum daily flows to eliminate the distortions created by high and variable housing vacancy rates. (See pages 200-201 of the DEIS.)

Comment: Housing demand is created by forces other than casino development, second home buyers, and retirees. (page 22) (SLT, NEAT)

Response: The statement in the DEIS should be revised to read: "Housing demand in the south shore is thus made up of people employed in the local economy, second-home buyers and retired persons." Government employment, recreational activities and tourism are certainly forces that generate housing demand.

Comment: It is questionable whether there is an undersupply of housing. Demand for houses to sell or trade is not the same as demand for units needed to shelter families. There are a lot of vacant houses at Tahoe. (page 22) (CTRPA)

Response: There is a difference between housing demand and housing need. Market demand for housing is the number of buyers wishing to purchase houses for whatever purpose--to occupy, to rent or to try to make a short-term speculative profit. Rising prices are an indication that demand has increased relative to supply (or has declined less than supply). The rapid rate of turnover in sewer permits is further evidence of very strong and increasing demand in the face of a fixed supply of buildable lots.

Housing need, on the other hand, is the need of families for shelter. It represents only one reason for people to demand housing. Housing need cannot be measured by

vacancy data, as the comment implies. High vacancy rates in the Lake Tahoe housing stock only indicate that the highest prices in the market are being offered by people demanding housing for purposes other than year-round owner-occupancy.

The high vacancy rates are created in part by permanent residents being forced out of the housing market by investor-owners. If these investor-owners did not purchase houses, more could be purchased by permanent owners and so vacancy rates might decline. The spillover of Lake Tahoe Basin employees to the Carson Valley is an indication that more people would like to have permanent residence in the basin than can afford it.

Comment: Housing prices in Carson Valley are as high as comparable units in the Carson City and Reno areas. (page 23) (DCPD)

Response: No detailed study was conducted to compare housing prices in the Carson Valley with those in Reno and Carson City. The statement in the EIS was not based on an analysis of housing price data, but rather on interviews with people knowledgeable about the housing market. Housing prices, in Carson Valley relative to Reno and Carson City, were inferred from the observation that there has been a shift of housing demand from Carson City and Reno to the Carson Valley. Though a number of factors could account for the shift, price differentials are likely to be highly significant.

Comment: A key assumption made in the EIS regarding growth is that the growth in south shore can be related to capacity alternatives for wastewater treatment plants. Actually the treatment plants are there to serve the public. Therefore, the plant must be sized to fit the demand. (page 23) (SLT)

Response: The DEIS did determine the treatment plant size needed to serve the public for each growth scenario, using the assumptions provided by the wastewater districts (see page 200 of the DEIS).

Comment:

- The EIS wrongly assumes that casino floor space will not grow. (page 24) (Ca. State Lands Commission)
- Expansion of casino floor space should account for major internal expansions. (page 24) (Caltrans)
- Nevada legislation prohibits casino expansion. (page 24) (SLT, Bill Huss)

Response: Three possible levels of casino growth were incorporated into the five growth scenarios. Thus, three separate and very different assumptions were made. The lowest level assumed no growth. The highest level was based upon all the new casino space that was planned, approved, or could be reasonably expected at the time the DEIS was prepared. This figure was chosen after much consideration and after consultation with and approval from the Technical Advisory Committee (TAC). Experience since 1978 makes it unlikely that the high estimate is too low. Though arguments could be advanced for an even higher level of growth, the informed and considered opinion of the EIS consultants and the TAC was to

choose the high growth figure used in the EIS. Moreover, with the passage of the revised Bistate Compact, the expansion of gaming activities is limited to 15 percent of the area existing or approved before August 4, 1980, and those projects with vested rights.

Comment: Assumptions regarding land use policies are unnecessarily limited. The use of CTRPA land use policies is not adequately justified considering the legal challenges they face. (pages 25, 34) (SLT)

Response: At the time the EIS was prepared, as well as at the present time, CTRPA land use policies are the policies legally in effect. Though their legality is being litigated, no predictions as to the outcome of the litigation could be made and so the development of the growth scenarios had to assume existing law.

Comment: There are no assumptions about the Carson Valley in Table 5 (which identifies the assumptions made regarding growth in the two districts and the reasons for selecting them). The EIS neglects spillover from Carson City and Reno. Measures to accommodate spillover and the responsibility of public officials to respond to it should be more thoroughly examined. (pages 24-26, 165) (DCPD)

Response: The impact of spillover to the Upper Carson River Basin was discussed in numerous sections of the DEIS. Chapter IIIG dealt exclusively with impacts on the social environment of the Upper Carson River Basin. Discussion can also be found in the section on growth scenarios, the Technical Appendices of the DEIS, and in other sections.

The focus of the DEIS, however, is on the Lake Tahoe Basin. To determine the impacts that development there would create, it was necessary to make assumptions about public policy and market forces in the basin. The extent of spillover to the Carson Valley, for example, would be affected by these factors. Because of its focus, however, the DEIS's treatment of Upper Carson River Basin was limited to estimating impacts that would be generated by growth in the Lake Tahoe Basin. It did not attempt to estimate growth in the Carson Valley resulting from other forces. As stated on page 29 of the DEIS, other market and public policy factors including spillover from Carson City and Reno will influence growth in the Carson Valley, but "consideration of these factors is outside the scope of this EIS." This focus was agreed upon during the early stages of the project. From the perspective of Carson Valley public officials needing to plan for future growth, the analysis of the EIS is probably insufficient, and a more detailed study beyond the scope of this EIS will be desirable.

Comment: It is questionable whether "growth is not directly constrained by environmental standards," and it seems in contradiction with the subsequent assertion that "environmental standards may affect or constrain growth." (page 25) (OPR, Ca. State Lands Commission, DCPD)

Response: The policies that have affected growth in the Lake Tahoe Basin have been land use policies, even though environmental concerns have been an important reason for the existence of those land use policies. No direct policies regulating development by a yardstick of environmental impacts had been implemented by the time the DEIS was prepared (though the Water Quality Plan of the State Water

Resources Control Board and the Nonattainment Plan for air quality were both being formulated). Therefore, since environmental concerns were reflected in land use policies, it would have been duplicative to say that both environmental standards and land use policies affected development. In the development of growth scenarios for the purpose of assessing impacts in the EIS, no new policies that measure permissible development directly by environmental standards were assumed. It was recognized, however, that the environmental impacts created by the project could lead to mitigation measures that would constrain development.

Comment: It is incorrect to assume no public acquisition programs other than the U.S. Forest Service's program. (page 26) (SLT, DCPD)

Response: While it is true that a number of public acquisition programs exist or have been proposed in addition to the U.S. Forest Service plan, the lack of enacting legislation and budget appropriations makes the existence and extent of most public acquisition programs uncertain, with the exception of the Santini-Burton Bill. Public purchase of one casino site has been made, and purchase of another is being negotiated. The City of South Lake Tahoe has a Park Lands and Open Space Commission. Not all planned purchase programs, however, have moved toward implementation. California voters rejected the Lake Tahoe Acquisition Bond program in November 1980. If additional public purchase plans are implemented, their effect would be to make the lower growth scenarios more likely than the higher growth scenarios.

Comment: The assumption was omitted that STPUD has a legal obligation to serve all of the 10,000 subdivided lots of record at this time. (SLT)

Response: The demand for wastewater facilities is based on assumptions of how much growth could be expected under a variety of economic/land use policies. The scenarios do account for intensive economic development which would require the development of the 10,000 vacant, subdivided lots (Scenarios 2 and 5). The other scenarios reveal that STPUD may not have to expand to meet the needs of all 10,000 lots. The proposed Lake Tahoe Water Quality Plan and CTRPA's 1980 Regional Plan recommend environmentally sensitive areas be protected, implying that only a portion of the 10,000 lots could be developed.

Comment: It must be considered that technological developments not now available will either alter the method of treating wastewater or allow development to take place without damage to environmentally sensitive concerns. (SLT, Ken Hoffman)

Response: It is certainly hoped that such technological developments will come to pass; however, it is impossible to speculate what those developments may be or how rapidly they may be feasibly implemented. Because of the uncertainty in these areas, no assumptions are made on possible technological breakthroughs.

Comment: Housing unit growth is estimated exclusively as development of single-family homes. It would, therefore, be an underestimate if multiple family construction is permitted. (page 28) (SLT)

Response: CTRPA policy permits multiple development on lots zoned MDR and HDR only after development has occurred on 85 percent of all vacant lots in the 1975 base year. Thus, if high growth scenarios involve development on more than 85 percent of the base year lots, the number of units built would probably be larger than the number projected on the assumption of one unit per lot.

The picture is made all the more complex, because the Bistate Compact does not permit approval of any new subdivision, planned unit development, or condominium project unless the required permits had been secured prior to the effective date of the Compact. Building permits for apartment buildings are limited, along with other residential units, to the number of permits issued in calendar year 1978. Whether these units would be permitted when the temporary moratorium is lifted depends on the carrying capacity study and the revision of the regional plan.

Comment: Table 7, which provides a summary of the growth scenarios, projects future construction of hotel/motel rooms. However, existing law does not allow for such construction. If it is assumed this law will be lifted, then similar assumptions must be made for other restrictions which ban subdivision, etc. (page 30) (SLT)

Response: Existing law does not prohibit construction of hotel and motel rooms, although such development is restricted by the Bistate Compact.

Comment: The 1978 sewer capacity requirements are low. The scenarios are based on less casino space in 1978 than actually existed. Therefore, Scenarios 1 and 2 that assume no casino growth underestimate treatment capacity currently needed. As a result, capacity expansion must be planned to accommodate at least the flows anticipated under Scenarios 3, 4 and 5. (page 30) (STPUD)

Response: The estimate of casino space in 1978 was based on the best data available at the time. It was an accepted number and was reviewed by the Technical Advisory Committee. Statistics subsequently made available suggest the DEIS number might be too low. If this were the case, however, it would not change the DEIS figure of 1978 flows. It would, however, reduce capacity requirements under all five scenarios.

The capacity requirements (maximum daily flow) in 1978 of 6.16 mgd for STPUD and 2.3 mgd for DCSID were based on actual flows reported by the two districts (page 200 of the DEIS). These flows were not computed based on an estimate of gaming floor space and so a change in floor space would not alter these capacity requirements.

Gaming floor space existing in 1978 was used in two ways in the development of the scenarios. First, it was used to relate gaming floor space to sewer flows in order to estimate the increase in capacity that would be required by a given increase in gaming floor space. If gaming floor space in 1978 was underestimated, the ratio of sewer flows to gaming floor space that was used in the scenarios would have been too high. Therefore, capacity expansion of DCSID required by casino expansion in Scenarios 3, 4, and 5 would have been overestimated.

The second use of 1978 gaming floor space was to develop ratios to relate future increases in floor space to future increases in demand for other tourist facilities, such as hotel/motel rooms, commercial space and second homes. Again, if the ratios were based on a 1978 gaming floor space estimate that was too low, the resulting ratios relating increases in gaming floor space to increases in demand for other tourist facilities would have been too high. It follows, then, that estimates of additional treatment plant capacity required by the expansion of these tourist facilities would have also been too high. Thus, the capacity requirements of both STPUD and DCSID under Scenarios 3, 4, and 5 would have been overestimated.

Because there is no casino growth under Scenarios 1 and 2, ratios relating casino growth to sewer flows and to other types of growth were not used in estimating plant capacity requirements under these scenarios. The accuracy of those estimates, therefore, does not rely on the accuracy of the estimate of 1978 gaming floor space.

Comment: The DEIS underestimates spillover housing under Scenarios 1, 2, and 3 since the Lake Tahoe Environmental Assessment states that spillover is at least 3,500 units. The DEIS has not tried to determine if outlying areas can accommodate the spillover or what impact these spillover employees will have on sewer plant requirements in the Lake Tahoe Basin. (page 31) (STPUD, DCPD, Kjer)

Response: Preliminary work on this EIS is cited as the source for the Lake Tahoe Environmental Assessment's figure (see Lake Tahoe Environmental Assessment, Technical Appendix L, Socio-Economics, page 29). (The EIS estimate is on page 42 of the Technical Appendices.)

There is no inconsistency in estimating existing spillover at 3,500 and estimating additional future spillover at less than 3,500. One figure is an estimate of what exists now, while the other is an estimate of how that will change in the future. In other words, if spillover in 1978 was 3,500 and growth under Scenario 1 would generate spillover of 1,340, the total spillover after growth under Scenario 1 was completed would be 4,840.

The maximum spillover forecast is for 6,680 housing units under Scenario 4. On page 295 of the Technical Appendices of the DEIS various estimates of potential dwelling unit growth in the Carson Valley were discussed and analyzed. It was concluded that a minimum of 21,690 units could be accommodated in Carson Valley under the land use policy in effect at the time. This is more than three times the maximum spillover estimated in the growth scenarios.

The impact of all people pursuing any activity in the Lake Tahoe Basin, including employees living outside the basin, was included in estimates of plant capacity requirements (see page 200 of the DEIS). Plant capacity requirements were estimated based on ratios relating building space to sewer flows. The impact of commuter employees was, therefore, measured through the ratios applicable to the types of buildings in which they are employed. In other words, their impact is accounted for in the ratios for motel rooms, commercial floor space, and casino floor space.

Comment: The entire spillover argument is naive, vague and unfounded. There has not been significant spillover of employees of the Carson Valley in the 1970's. Housing there is expensive, few multiple unit housing developments have been constructed, and an "unscientific" pool found that less than 10 percent of Carson Valley residents work in the south shore. (Raymond Smith)

Response: The spillover argument has been verified as significant by a number of studies dating from the early 1970's. An early survey of employees of Harrah's and Harvey's showed that 11.5 percent lived in Carson City or the Carson Valley (Tahoe Palace EIR, Raymond M. Smith, AIP, April 1973, page 65). The Carson River Basin Council of Governments noted in 1973 that more than 10 percent of Lake Tahoe employees commuted to Carson City or Carson Valley and concluded that "as environmental constraints impose limitations on residential development in the Tahoe Basin, and as new hotel-casinos are built at Stateline, the residential impact upon Carson City and Carson Valley will probably grow significantly." (Carson River Basin Council of Governments, Population and Economics Report, Volume I, Existing Conditions, September 1973, page 48).

The DEIS estimates a spillover in 1978 of 3,000-3,500 employee households (or 4,500-5,250 employees) (pages 40-44 of the DEIS Technical Appendices). This represents 21-24 percent of 1978 average summer employment in south shore. Not all of this estimated spillover population, however, lives in Carson Valley or Carson City since, as defined in the EIS, spillover employees also live in Alpine County or the north shore.

Housing stock and employment growth in the 1970's suggests that spillover has increased in such a way that the DEIS estimate for 1978 is consistent with the survey results from the early 1970's. Between 1970 and 1978, employment in south shore grew 105 percent while the housing stock grew only about 65 percent (computed from data in the Western Federal Regional Council, Lake Tahoe Environmental Assessment, Technical Appendix L, Socio-economics, December 1979, pages 15-37). During that same period of time, according to the Douglas County Planning Department, population in the Carson Valley increased 328 percent. It seems very likely that some of that population growth was of people working in south shore who, because of the limited housing growth and the rapidly rising prices, were unable to afford to live in the Tahoe Basin. The increase in spillover has been verified by recent surveys of employees at Park Tahoe and the Sahara Tahoe that showed that approximately 60 percent of them live outside the Tahoe Basin (interview with Dick Milbrodt, City Manager, City of South Lake Tahoe, 23 July 1980).

The DEIS growth scenarios estimate additional spillover consistent with the estimated 1978 spillover. Spillover varies significantly among the alternatives as employment and housing stock growth varies. With little housing growth and much employment growth (Scenario 4), additional spillover is estimated at 8,120 employees, or 57 percent of employment growth. In another case with large housing growth (Scenario 5), spillover growth is estimated at 1,900 employees, or 12 percent of employment growth.

Though Carson Valley homes may be expensive, they are still less expensive than homes in the Lake Tahoe Basin, and thus spillover occurs. The growth of multifamily units is not a valid indication of the supply of low-cost housing. Multiple unit developments are more common in the basin precisely because the supply of developable land is so tight and its costs, therefore, so expensive. In the

Carson Valley, where land has been cheaper, the cost difference between single-family and multifamily units has been smaller than in the Lake Tahoe Basin. There has therefore been less demand for multiple family units and less marketing advantage to developers for building them.

Comment: The environmental impacts on Alpine County need to be addressed. (page 33) (CTRPA, Friends of Alpine, Resources Agency, LRWQCB)

Response: As indicated by numerous reviewing agencies, there exists potential for serious impacts on Alpine County as a result of the spillover phenomenon. Early investigations and interviews on the extent of spillover into the County did not provide any conclusive evidence. Nevertheless, it was recognized by EPA as a possible consequence of activities in the Lake Tahoe Basin and to dismiss it would have violated the intent of the National Environmental Policy Act. Because the spillover population would be south shore employees, it was presumed that the majority would locate in Carson Valley where road access is better than in Alpine County. Additionally, it was believed that Alpine County would develop as a "bedroom community" only as a consequence of extensive pressure to do so and even then, housing costs would still be beyond the means of most south shore employees. For these reasons, it was believed the amount of spillover into Alpine County would be minor. For impact assessment purposes, it was assumed 5 percent of the spillover population would locate in Alpine County. This figure may be low or it may be high--there is no known available data to confirm or disprove it.

The environmental effects of this spillover are discussed in the DEIS, and the major impacts include possible encroachment on sensitive biological resources, conversion of agricultural and open space lands to residential uses, possible deterioration of scenic beauty and view corridors, and overburdening public services. The potential effects on Indian Creek Reservoir, the groundwater, and the soils as a result of STPUD's proposed project were addressed in the environmental impact report prepared for the district and is available for review at the offices of STPUD and the Lahontan Regional Water Quality Control Board, in South Lake Tahoe, and at EPA, Regional IX, in San Francisco. A summary of these effects is provided on pages 80-81.

WASTEWATER MANAGEMENT ALTERNATIVES (pages 39-56)

Comment:

- Questions/corrections regarding the description of the STPUD and DCSID wastewater facilities should be used to correct and update the discussion of the plants, their treatment processes, and their operation (LRWQCB, Friends of Alpine, Brecher, NDEP, Natural Resources Defense Council, Lake Tahoe Audubon Society, Williams, Huss, Kjer)
- More recent data exist that requires a revised discussion of plant performance for both STPUD and DCSID. The STPUD section should include the current NPDES Permit; the DCSID section should include an updated discussion of the lawsuit filed by EPA and the Natural Resources Defense Council. (LRWQCB, DCPD, Nevada Environmental Action Trust, Glenbrook Properties)
- Some clarification is needed on what DCSID is actually proposing. Baseline flows, whether maximum daily, average daily, etc., need to be carefully defined. (LTSLT, Glenbrook Properties, Raymond Smith, Natural Resources Defense Council, CTRPA, LRWQCB, NDEP, Huss)

Response: Because of the many changes that have occurred since the DEIS was prepared, the document no longer accurately reflects the existing conditions at the facilities. Both districts have prepared updated facility plans. Those plans along with the comments submitted on the DEIS have been used to prepare a revised description of the facility plans, the discharge requirements, and plant performance (see Chapter III).

In brief, STPUD is seeking a 7.5 mgd maximum daily flow wastewater treatment plant which produces secondary treated and filtered effluent; an export system of pumping stations, and pipelines with ability to reliably convey filtered secondary effluent to Alpine County; and an effluent storage reservoir in Alpine County, transport canals and irrigation systems.

DCSID, on the other hand, "elected to construct some of the facilities recommended in the Draft Facility Plan, forfeiting any Federal monetary participation." (Creegan & D'Angelo, Supplement to Draft Facility Planning Report for Wastewater Management Grant No. C-32-0140, November 1980, page 1-4). The district is proceeding on a schedule of improvements, established during the settlement of the lawsuit filed by EPA and the Natural Resources Defense Council. Treatment plant modifications are being financed by the district. The proposed project calls for facilities capable of accommodating 3.75 mgd on a peak monthly basis, or 4.5 mgd on a maximum daily flow basis.

Comment: The discussion of wastewater treatment and disposal alternatives for STPUD (pages 45-52) was not broad enough (OPR) and did not include the following:

- an evaluation of conventional secondary treatment, advanced secondary treatment, versus advanced wastewater treatment (LRWQCB);

- an evaluation of alternatives to disposal in Alpine County (Caltrans); or
- an evaluation of different treatment capabilities (SWRCB).

Response: Many of these issues were addressed during the facilities planning effort and in the EIR prepared for the district on the facility plan. A summary of the alternatives and the evaluation process undertaken in arriving at STPUD's recommended alternative is found in Chapter III. For further detail, the district's Facility Plan, EIR, Facility Plan Update, and Facility Plan Update Technical Appendix should be consulted. Copies of these documents are available at STPUD's office in South Lake Tahoe.

Comment: The discussion of other wastewater systems in the study area is erroneous and out of date. (page 48) (DCPD, NDEP)

Response: The information obtained to prepare the discussion on other wastewater systems that could affect wastewater planning for DCSID was the best available when the DEIS was prepared. It is now understood that the Gardnerville Ranchos System has been discontinued, and that units on that system have been connected to the Minden-Gardnerville Sanitation District System. At the north end of the Carson Valley is the Indian Hills General Improvement District facility which is designed to serve approximately 1,000 units.

Comment: The "No Project" alternative is not discussed. The impacts of such an alternative must be addressed. (CTRPA, Ca. State Lands Commissions, Friends of Alpine, LRWQCB, Lake Tahoe Audubon Society, TRPA, Brecher, Resources Agency, OPR, NDEP, DCPD, SLT, STPUD, Ronald Nahas, Michael Kelley.)

Response: The no project alternative and its implications are addressed in Chapters I and III. Essentially, without federal assistance, which constitutes the no project alternative, STPUD faces two choices. It can do nothing, in which case there is the continued threat of plant failures and water quality degradation. The district acknowledges that it is having difficulties in operating the facility in compliance with the water quality standards. Aging equipment, lack of key standby units and the increasing cost of wastewater treatment are serious issues that now face the district. The do-nothing approach would definitely impair other efforts to preserve the basin's water resources and their beneficial uses. Alternatively, the district can seek to implement either a portion or all of the proposed project. The latter would require a \$28 million bond to make the necessary modifications. Assuming such an effort were successful, district users could expect to see a relatively large increase in their bills.

DESCRIPTION OF STUDY AREA (pages 58-61)

Comment: The DEIS states the rate of urban development in the Upper Carson River Basin has been slower than in the Lake Tahoe Basin. Information held by Douglas County suggests otherwise. (page 60) (DCPD)

Response: The Douglas County Planning Department comment may be correct. No data is available that would deny the department's figures on growth rates in the Carson Valley (328 percent between 1970 and 1978) and the Douglas County portion of the Tahoe Basin (275 percent). During the same period of time, population in South Lake Tahoe grew 59 percent (according to the California Department of Finance), thus further substantiating the DCPD claim. The EIS, however, discusses relative rates of "urban development," not population growth. A measure of urban development other than population is utilized within the EIS.

DIRECT EFFECTS (pages 62-65)

Comment: Much greater detail is needed on the impacts of the proposed action in the Upper Carson River Basin, particularly in Alpine County. (David Moser, LRWQCB, Friends of Alpine)

Response: The facility plan, along with its companion environmental document, was issued by STPUD in May 1978. Because land application of treated effluent was considered a highly viable alternative, it received a detailed examination in terms of feasibility, cost, and impacts. As a result, many critical issues over impacts on Alpine County's water resources and agricultural lands were raised. Efforts to respond to these concerns were reflected in the mitigation measures in the EIR and in the provisions of the NPDES permit issued by the Lahontan Regional Water Quality Control Board.

The district has continued its evaluation of the agricultural reuse plan. This evaluation, along with an updated description of the plan, was released in a document titled Technical Appendix for STPUD Facility Plan Update, Vol. I, December 1980. A summary of the Technical Appendix, as it relates to effluent disposal in Alpine County, is provided in the revised project description (see Chapter III) and should address the issues left unresolved by the 1978 Facility Plan and EIR.

Some of the direct effects of concern are summarized here.

- Because the amount of effluent available for irrigation will increase and therefore the number of acres that can be irrigated can increase, it is expected the proposed project would have a long-term beneficial effect on the agricultural industry.
- With respect to possible effects on soils in Alpine County, there would be no adverse effects, with proper soil management and irrigation operations to prevent salt build-up or decrease in soil permeability.
- The treatment and storage of wastewaters can create local odor problems. Anaerobic decomposition creates the greatest problem. To date, the high level of treatment and aeration provided at Indian Creek Reservoir have avoided problems that could produce severe odor problems. The proposed reservoir site is near the Indian Creek Reservoir recreation area and odors from the reservoir could adversely affect recreationalists, unless the aeration facilities are properly operated.
- Indian Creek Reservoir would no longer be supplied by STPUD's effluent. Instead, the reservoir water level would be controlled by additions from surface runoff flows, losses due to seepage and evaporation, and any irrigation uses of water directed to the reservoir. The district has determined an average of 834 acre-feet year of supplemental water would be needed to maintain the water level. The most likely source is through an exchange of water rights which is contingent upon approval by the Federal Court. A potential source of water supply is the West Fork of the Carson River. An added benefit of using this high quality stream is that it should end ammonia toxicity for trout in Indian Creek Reservoir and would probably introduce a lighter nutrient load which would decrease the growth of algae. Thus, it is

anticipated that water quality in the reservoir will improve as a result of the proposed project. It was recommended that monitoring of the reservoir should continue in order to detect changes in chemical parameters. Indian Creek Reservoir is also a major recreational facility, and the district must insure the preservation of existing recreational uses at the reservoir.

- The possibility exists to degrade surface water quality in both Indian Creek and the West Fork of the Carson River, as agricultural runoff that might enter these waters would be of lower quality than natural runoff. To mitigate this potentially adverse impact, the district proposes to install a collection system that would prevent runoff from entering surface waters. It was also determined that there would be no adverse impacts on stream flows as a result of the project.
- Public health threats result primarily from potential bacterial or viral contamination of domestic groundwater supplies. The long-term effects on groundwater cannot be determined and will require further investigation. The district is required (by its NPDES permit) to monitor the groundwater to determine water quality and groundwater storage conditions. The likelihood of contaminating wells in the Diamond Valley appears small, as most are drawing water from considerable depths. Another possible public health hazard results from direct human contact with the effluent. Public health threats from aerosols can be minimized by maintaining buffers between the sprinkler systems and residences or public right-of-ways. The district must also observe guidelines, specified by the California and Alpine County Department of Health, to protect both groundwater and the public at large in reuse areas.

C. RESPONSES TO COMMENTS ON LAKE TAHOE BASIN ENVIRONMENTAL SETTING AND IMPACTS

WATER RESOURCES AND WATER QUALITY

WATER RESOURCES (pages 66-80)

Comment: Flooding problems caused by a lack of storm drainage has not been discussed. (page 69) (SWRCB)

Response: The DEIS contains only a brief mention of the increased frequency of localized flooding because of continuing residential and commercial development. Further discussion is offered here to address the important issue raised.

As the natural groundwater is replaced by impervious surfaces, including roads, roofs, parking lots, etc., the ability of stormwaters to infiltrate the ground is diminished. The consequence is greater runoff volumes and rates. As indicated, the absence of adequate drainage facilities to convey and dispose of these flows safely creates local flooding hazards that threaten public safety. The lack of adequate drainage facilities also greatly accelerates erosion and sedimentation. The Lake Tahoe Basin Water Quality Plan (State Water Resources Control Board, September 1980, p. 75) reports that there are over 118 miles of drainage systems within the basin which are inadequate, unstable, or contain unstable discharge facilities. Because the absence of adequate drainage facilities is a serious water quality problem, as well as public safety concern, both the DEIS and the proposed Water Quality Plan recommend roadside drains and storm sewers. Specifically, construction of curbs and paved shoulders is suggested in steep areas to collect and convey runoff from road surfaces; in sparsely developed areas or flatter terrain, roadside areas may be stabilized with vegetation or gravel; and heavily developed areas would require some form of curb and gutter runoff collection system.

Comment: The statement is made that water was pumped from the lake during the drought years to meet western Nevada discharge requirements. This is incorrect; water was not pumped from the lake. (page 69) (LRWQCB, NDEP, Lake Tahoe Audubon Society)

- **Response:** The text should be revised to read:

During the recent drought of 1976-1977, storage volume was reduced by 590,000 acre-feet, gravity flow from Lake Tahoe ceased, and some consideration was given to pumping water from the lake in order to meet western Nevada discharge requirements, although this was never done.

WATER QUALITY (pages 81-93)

Comment: The visitor figures are largely a result of recreational opportunities in the basin. The text misleadingly gives the impression that they result from the beneficial uses of the lake. (page 70) (LRWQCB)

- **Response:** The text should be revised to read:

In 1970, 34,000 people lived in the basin, and on a peak summer day, another 98,000 could be expected to visit Lake Tahoe. By 1977 these figures had soared to 56,000 residents and 229,000 peak-day visitors. The growth in resident and seasonal population can largely be attributed to the beauty of the lake and the recreational opportunities it offers. However, the major factor generating growth in the basin, possibly even more so than the outdoor recreational experience, has been the growth of the casinos and gambling-related activities.

Comment: The DEIS makes the statement that no monitoring of water quality conditions in Lake Tahoe is now being performed. In fact, the U.C. Davis Tahoe Research Group is and has been monitoring the lake. (page 76) (LRWQCB)

Response: The statement in the DEIS refers to long-term comprehensive monitoring in Lake Tahoe. As the Lahontan Regional Water Quality Control Board indicates, the Tahoe Research Group has done limited monitoring in the lake. It was through Dr. Charles Goldman, who heads that group, that information on the algal growth rate was obtained.

Comment: The discussion on violations of water quality objectives should emphasize the concept of threatened violations. (page 76, last paragraph) (LRWQCB)

- **Response:** The text should be revised to include the above-referenced concept of threatened violations:

Tributaries

Tributary water quality varies depending on the intensity of development in the watershed. Tributaries draining developed areas have higher concentrations of chemical constituents and nutrients than tributaries draining undeveloped areas (see Table 20). The differences between developed and undeveloped areas are substantial for suspended solids, turbidity, phosphorus, iron, chlorides, and algal growth potential. Tributaries in the study area are identified in Table 21 along with their quality measurements. By comparing these measurements with the standards approved in the basin plan (see Table 16), it can be said that water quality occasionally exceeds the objectives for total nitrogen and phosphorus. It cannot be claimed that a violation has occurred unless the contributing source has caused the annual average or the 90th percentile (whenever appropriate) concentration of the water body to be beyond the limit expressed in the standard. Nevertheless, according to the Lahontan Regional Water Quality Control Board, if it can be shown that a source will or may raise the annual average to exceed the objective, that, in itself, is a violation.

Comment: Table 20 shows the difference in water quality between tributary streams draining developed and undeveloped watersheds. It should be noted that some of the undeveloped tributaries have been influenced to some extent by man. (page 79) (LRWQCB)

Response: The description of watersheds as developed or undeveloped was a general characterization, and the distinction between the two categories should be interpreted relative to one another. Thus, an undeveloped watershed does not mean that no development or disturbance has occurred, but that in comparison to other watersheds its conditions are more similar to natural conditions.

Comment: The discussion on the "Effects of Urbanization" should be revised to:

- Mention additional pollutant sources (DCPD, LRWQCB).
 - Emphasize the impacts of land disturbance in environmentally sensitive areas as well as on lands of high land capability (LRWQCB, LTSLT, CTRPA, TRPA).
 - Incorporate the results of work conducted by the State Board in its preparation of the 208 Plan (SWRCB, Lake Tahoe Audubon Society, LTSLT, Brecher, LRWQCB).
 - Clarify number of vacant lots in SEZs in STPUD's area (SLT).
- **Response:** The following discussion responds to the above comments and should replace the text in the DEIS, pages 81-93.

EFFECTS OF URBANIZATION

The waters of Lake Tahoe are renowned for their clarity and exceptional quality. As a result, it has been designated as an outstanding national resource, which affirms the lake's extraordinary quality and prohibits any actions that would degrade this quality (40 CFR 35.1550(e)(2)). The greatest threat to this quality is sediment and nutrient loading. Nutrients which stimulate algal growth enter the lake through erosion and surface runoff, groundwater flows, wash-out of air-borne materials in rain and snow, and leaching of sewage previously disposed on land. Sediments reduce the visual attractiveness of the lake, particularly in the nearshore areas, and disturb aquatic organisms. Under extreme conditions, sediments smother organisms that provide food for fish, destroy spawning areas and fish habitats and reduce recreational enjoyment. Nutrients enhance algal formation and accelerate eutrophication of the lake. (Eutrophication is a natural process which results in the nutrient enrichment of a water body.) An eutrophic lake is characterized by a large quantity of planktonic algae, low water transparency, high dissolved oxygen in the upper layer, zero dissolved oxygen in deep layers during summer months, and large organic deposits. Because Lake Tahoe is so deep and the nutrient loading is minimal, its eutrophication would normally be extremely slow. However, urbanization has greatly accelerated both eutrophication and sedimentation.

Natural Conditions

Sediment and nutrient loadings occur under natural conditions and up to a certain level is important for the health and productivity of the lake. However, development has greatly increased the amount of pollutants entering the lake and its tributaries. As mandated by the Federal Water Pollution Control Act Amendments of 1972, a nationwide water quality management planning effort was initiated. TRPA was designated with the responsibility for preparing a Lake Tahoe Basin Water Quality Management Plan, also known as a "208" Plan. In order to assess the impacts of development on water quality, TRPA estimated sediment and nutrient loadings under natural conditions and compared these levels to those from "disturbed" (i.e., developing or developed) conditions. It was determined that surface runoff from disturbed or eroding land carries soil particles (sediment) and plant nutrients that otherwise would remain in the soil. Moreover, nutrient concentrations in runoff are increased not only by erosion on developed properties, but also by the presence of impervious surfaces. These surfaces diminish the ability of the natural groundcover to capture and hold nutrients and of precipitation to seep into the ground.

Under natural conditions, TRPA estimated 32,000 metric tons per year of suspended soils and 102 metric tons per year of total nitrogen enter the lake. These estimates are high because TRPA assumed that measurements from general forest lands would be a good surrogate for those from undeveloped, natural lands. In fact, a significant amount of disturbance has occurred on these lands, and thus the pollutant loadings from natural areas are actually much lower.

Because the draft TRPA Water Quality Management Plan lacked a strong implementation program, the California State Water Resources Control Board prepared its own Water Quality Plan, issued in 1980. (TRPA plans to make amendments to its original plan which should make it consistent with the State Board's proposed Lake Tahoe Water Quality Plan.) As part of its effort, the California State Water Resources Control Board reviewed studies for a number of thoroughly evaluated watersheds and established a relationship between suspended sediment yield, land capability, and percent of land disturbance.* Using this relationship, the State Board estimated an annual sediment loading of 3,100 metric tons under natural conditions. Table 22 compares the 1977 Draft 208 Plan figures against the revised figures. The State Board figures above provide a baseline against which to assess the impacts of development.

*Land capability is an assessment of the land's tolerance for development without sustaining permanent damage through erosion or other causes and was developed by the U.S. Forest Service with TRPA. The land capability classification system devised by TRPA and the U.S. Forest Service should not be confused with the system used by the U.S. Soil Conservation System, which is also referred to as the land capability classification system. The system used by the Soil Conservation Service assesses different soils for their suitability to be put into agricultural production. The system devised by the Forest Service in 1971 considers a number of factors and provides a relative quantification of tolerance of land to human disturbance.

TABLE 22
SEDIMENT AND NUTRIENT LOADING TO LAKE TAHOE
UNDER NATURAL CONDITIONS (metric tons/year)

<u>Parameter</u>	<u>State Board</u>	<u>TRPA</u>
Suspended Sediments	3,100	32,000
NO ₃ Nitrogen	—	14
Total Nitrogen	26.3	102
Total Phosphate	37.1	50
Iron	340.2	170

Source: California State Water Resources Control Board, Lake Tahoe Basin Water Quality Plan, September 1980, page 67, B-17.

Pollution Resulting From Urbanization

Development of the basin accelerates the loading rates of pollutants into water bodies far over what is experienced under natural conditions. TRPA, as part of the water quality planning process, initiated an extensive field survey in 1975 to identify water quality problems associated with development.

In general, the major impacts of development resulted from one or a combination of the following three actions: removal of vegetation, construction of impervious surfaces, and creation of unstable conditions.

Each of these actions in some way modifies the natural drainage patterns and creates conditions favorable for erosion. The removal of vegetative cover means the loss of natural groundcover that generally acts to slow down the velocity of surface runoff, permits infiltration, and filters sediments and nutrients in the surface runoff. Moreover, natural vegetation and the soil particles can tie up these nutrients which would otherwise be found in runoff to the lake. The construction of impervious surfaces, similarly, prevents the infiltration of surface runoff and acts as a source and collector for pollutants such as dust and dirt and residues from automobiles. Creation of unstable conditions greatly contributes to the amount of erosion and sediment loss in the basin.

Common activities that lead to these impacts are identified in the Table 23.

Existing Problems. Estimates of the present loadings from these sources were prepared both by TRPA in 1977 and by the State Board in 1980. The one startling result from both studies is the percentage increase in loadings over natural conditions (see Table 24).

TABLE 23
WATER POLLUTANT SOURCES AND IMPACTS

<u>Pollutant Source</u>	<u>Water Quality Impact</u>
Erosion and Drainage	
● areas stripped of vegetation ● unstable roadway slopes ● unsurfaced roads, streets, and driveways ● eroding roadway shoulders and roadside ditches ● inadequate or unstable drainage systems	- reduced infiltration, greater surface runoff volume, greater erosion - sheet and rill erosion - sheet and rill erosion - sheet and rill erosion - increased concentration of surface runoff discharging onto erodible areas
Intensive Urbanization	
● areas of intensive vehicular use: parking lots, service stations, roads ● snow removal ● construction sites ● golf courses ● unsurfaced private roads	- deposits of grease, oil, suspended and settleable solids, nutrients, floatables - deposit of road salts and deicing compounds - see impacts of Erosion and Drainage - fertilizer, herbicide, fungicide, and other chemical applications - see impacts of Erosion and Drainage
Forest Lands	
● timber land ● dirt roads ● off-road vehicles ● livestock confinement/grazing ● campgrounds ● ski resorts	- see impacts of Erosion and Drainage, pesticides and chemical applications - see impacts of Erosion and Drainage - soil compaction - nutrient loading - see impacts of Erosion and Drainage - soil compaction - see impacts of Erosion and Drainage - see impacts of Erosion and Drainage
Others	
● groundwater ● municipal sewage: unlined sewage ponds, raw sewage overflows, exfiltration, onsite disposal systems ● atmospheric sources	- introduction of nutrients, extent unknown - direct flow of sewage into surface waters - sewage leaching into groundwaters - pollutant concentrations in precipitation

TABLE 24
POLLUTANT LOADINGS TO LAKE TAHOE
(metric tons/year)

	Sediment		Total Nitrogen		Total Phosphorus		Total Iron	
	State Board	TRPA	State Board	TRPA	State Board	TRPA	State Board	TRPA
Natural Conditions	3,100	32,000	26.3	102	37.1	50	340.2	170
Present Level of Development	60,800	64,000	383	149	606	81	3927	197
Percent Increase Over Natural Conditions	1861%	100%	1360%	46%	1530%	62%	1050%	16%

Source: California State Water Resources Control Board, Water Quality Plan, Lake Tahoe Basin (draft), 1980.

While there are numerous development-related activities with water quality impacts, as seen in Table 23, over 50 percent of present sediment loading in the basin results from identified erosion and drainage problems. The most significant problem is unvegetated and oversteepened roadway slopes, as seen in Table 25.

TABLE 25
SOURCES OF SEDIMENT YIELD

<u>Source</u>	<u>Metric Tons/Year</u>
Areas stripped of vegetation	1,810
Unvegetated and oversteepened roadway slopes	13,210
Eroding roadway shoulders and ditches	6,610
Eroding dirt roads	2,460
Unstable drainage systems	2,760
On-site runoff problems	4,000

Source: California State Water Resources Control Board, Water Quality Plan, Lake Tahoe Basin (draft), 1980.

Within the STPUD and DCSID service area, the extent of erosion and drainage problems is identified in Table 26. Assuming that the extent of the problem (i.e., acres of unvegetated slopes, miles of oversteep roadway slopes, etc.) corresponds closely to the sediment yield, the STPUD and DCSID areas account for a majority of the basin's sediment problems. In particular, the survey conducted by TRPA in 1975 indicates that the study area counts for:

- 72% of the basin's eroding dirt roads,
- 60% of the basin's areas of stripped vegetation,
- 60% of the basin's eroding roadway shoulders and ditches,
- 56% of the basin's inadequate or unstable drainage systems,
- 53% of the basin's oversteep roadway slopes, and
- 44% of the basin's unvegetated roadway slopes.

The conclusion is that there are already serious existing erosion problems in the study area. The severity of the erosion problem will be compounded by future land disturbance.

Future Problems. Of particular concern in efforts to ameliorate the problems of erosion and sedimentation is the location of future development. There are environmentally sensitive areas where development would greatly accelerate sediment and nutrient loadings. These areas include high erosion hazard lands (HEHL) and stream environment zones (SEZ) which are described in greater detail in the following paragraphs.

High Erosion Hazard Lands. Lands in the Lake Tahoe Basin are grouped into three erosion categories: high hazard, moderate hazard, and low hazard. Disturbance to HEHL would result in the greatest sediment loss. Accordingly, the regional planning agencies have adopted ordinances which seek to limit the amount of development (hence, the amount of disturbance) on these lands. Nevertheless, most of the development in the basin has not conformed to the land capability system. Many subdivisions were built before ordinances implementing the land capability system were adopted. Even with their adoption, these ordinances still allow both residential and commercial development to override coverage limitations in many cases. Because of the risk of increased erosion and surface runoff, lands where development would exceed the land coverage permitted by the land capability system should be considered environmentally sensitive. The issue of exceeding coverage limitations is a significant issue and is addressed in the next section.

HEHL include soils and landforms with high disturbance characteristics such as steep slopes, unvegetated roadways, and eroding drainage ditches. TRPA's land use capability system segregates lands with different hydrologic, erosion, and vegetation conditions into classes on a scale of 1 to 7. HEHL are classified 1a, 1c, and 2, lands that cannot tolerate human disturbance without interfering with erosion rates and hydrologic conditions. A simple empirical formula, derived by the State Board, shows a close relationship between suspended solids production, land capability, and amount of land disturbed. Based on an evaluation of nineteen watersheds with well-developed estimates of annual suspended sediment production and an estimate from a totally impervious area, the formula predicts erosion rates within a reasonable range of accuracy ($R=0.69$, percent significance=95%). (Ca, State Water Resources Control Board, 1980)

TABLE 26
EROSION AND DRAINAGE PROBLEM
IDENTIFICATION BY WATERSHED

		Problem Type and Quantity					
#	Watershed Name	Unveg. Roadway Slopes (acres)	Oversteep Roadway Slopes (miles)	Areas Stripped of Vegetation (acres)	Eroding Roadway Shoulders & Ditches (miles)	Inadequate or Unstable Drainage Systems (miles)	Eroding Dirt Roads (acres)
STPUD							
41	Bijou Park	7.41	1.06	--	32.08	10.42	13.73
42	Bijou Creek	--	--	3.21	20.88	4.68	6.23
43	Trout Creek	9.46	4.04	7.48	46.46	9.38	10.98
44	Upper Truckee River	45.22	9.16	59.65	130.70	25.26	35.84
45	Camp Richardson	--	--	--	9.91	2.65	--
46	Taylor Creek	0.92	1.13	--	2.09	0.09	1.38
47	Tallac Creek	1.79	0.31	--	3.37	0.10	6.02
48	Cascade Creek	0.57	0.10	--	1.15	0.02	4.99
	Subtotal	65.37	15.80	70.34	246.64	52.60	79.17
DCSID							
27	Deadman Point	No problem identified					
28	Slaughter House	14.78	1.59	0.69	0.80	0.58	--
29	Glenbrook Creek	20.99	5.54	0.69	1.00	0.12	1.49
30	North Logan House Creek	2.17	0.19	--	0.59	--	10.99
31	Logan House Creek	0.99	0.36	0.11	0.15	0.21	--
32	Cave Rock	7.19	1.34	--	0.64	0.41	0.63
33	Lincoln Creek	7.21	1.80	1.15	2.59	0.98	1.38
34	Skyland	1.12	0.40	--	2.21	0.86	13.89
35	North Zephyr Creek	0.39	0.28	0.40	0.84	0.38	--
36& 37	South Zephyr Creek	3.73	1.84	1.38	2.91	0.93	1.38
38	McFaul Creek	4.09	1.71	1.52	1.69	1.87	2.27
39	Burke Creek	24.73	4.25	18.07	7.58	2.62	8.41
40	Edgewood Creek	47.99	9.66	37.71	9.83	4.09	7.26
	Subtotal	135.38	28.96	61.72	30.83	13.05	47.70
	Total	200.75	44.76	132.06	277.47	65.65	126.87

Source: Adapted from Tahoe Regional Planning Agency, Lake Tahoe Basin Water Quality Management Plan, Vol. I., pp. VI-6-7, 1977.

As of 1978, there were 675 acres of zoned but vacant lands in HEHL in STPUD's service area and 580 acres of zoned but vacant lands in HEHL in DCSID's service area (see Table 27).

TABLE 27
VACANT LAND IN HIGH EROSION HAZARD LANDS¹

<u>Land Use District</u>	<u>Total Zoned Vacant Land (acres)</u>	<u>Total Zoned Vacant Land In HEHL (acres)</u>	<u>Percent of Vacant Land in HEHL</u>
STPUD			
Residential	2500.0	611	24.4
General Commercial	403.7	41	10.2
Tourist Commercial	200.6	23	11.5
		<u>675</u>	
DCSID			
Residential	1117.0	552	46.9
General Commercial	76.8	10.9	14.2
Tourist Commercial	93.0	16.7	18.0
		<u>579.6</u>	

¹Figures derived by Sedway/Cooke using CTRPA 1978 land use maps and TRPA 1977 land use maps.

The potential for water quality degradation from land disturbance is great. In the DCSID area, especially, a large proportion of the remaining vacant zoned land is in HEHL. Intensive development in HEHL would undoubtedly and adversely affect the beneficial uses of waters in the Lake Tahoe Basin. Even with proper site development precautions, the fragility of these areas would result in large increases of sediment yield.

Stream Environment Zones. Stream Environment Zones (SEZs) are major and minor streams, intermittent streams and drainageways, meadows, and wetlands, and other areas of water influence. They convey spring snowmelt, stormwater, and other forms of runoff from the hillsides of the basin to the lake, and as runoff moves through these zones, sediment and other pollutants in the runoff are often removed. The natural cleansing capability of SEZs is important to the water quality of the basin. They are extremely diverse and represent a valuable biological community. TRPA, as part of its water quality management planning, identified and mapped these zones, and its inventory of these environmentally sensitive areas provides the basis for an assessment of the extent of potential impact from land disturbance.

As described earlier, much of the soil of the basin is fragile and easily erodible. Once dislodged, soil particles and attached nutrients can enter the lake, where they diminish water clarity and stimulate algal growth. Natural meadowlands offer resistance to waters flowing over them, and thus permit greater disposition of suspended sediments before they enter a water body. The effectiveness of this natural cleansing capability was investigated by the EPA Environmental Monitoring and Support Laboratory (U.S. EPA, 1979). Major findings from the field work reveal:

- The efficiency of meadowland treatment was greatest when the concentrations of nutrients and sediments were highest (during rainstorms);
- Treatment effectiveness is reduced by increases in slope and by runoff flow that occurs as channels (rather than sheet flow);
- Meadowland systems are highly variable with respect to nutrient removal and determination of treatment capacity should be evaluated on a system-by-system basis;
- Extensive grazing reduces treatment effectiveness by altering filtration characteristics; and
- Filtering effectiveness in the functioning meadowlands increased during high flows for sediments, total phosphorus, total Kjeldahl nitrogen, turbidity, and organic carbon.

Only two of the eight systems investigated, Blackwood Road Drainage and to a lesser extent Trout Creek, demonstrated efficient meadowland treatment. The effectiveness of SEZs as treatment processes depends heavily on the individual characteristics of the meadowland, as well as the location and intensity of development. Meadowlands were found, in some instances, to cause an increase in pollutant loading, but these situations were sometimes explained by factors unrelated to the meadowland itself. For example, in one study area, a storm drain collecting runoff from a mobile home park caused high phosphorus readings. The greatest reduction in pollutant loading was observed in the Blackwood Road Drainage during the spring, when nitrite and nitrate concentrations were reduced 96 percent. When at least 0.01 inch of rain falls, average percentage reductions of greater than 90 percent were observed for total phosphorus, turbidity, total residue, and total non-filtrable residue.

The amount of vacant land in SEZs in the study area is shown in Table 28. The fact that these areas are zoned for urban uses is a serious conflict between land use and environmental quality.

The implications of urbanization in these areas are threefold:

- The ability of these zones to convey surface runoff will be restricted.
- Severe disturbance to valuable fish and wildlife habitats will occur.
- A potentially effective natural treatment process will be removed.

TABLE 28
VACANT LAND IN STREAM ENVIRONMENT ZONES¹

<u>Land Use Districts</u>	<u>Total Zoned Vacant Land (acres)</u>	<u>Total Zoned Vacant Land in SEZs</u>		<u>Percentage of Vacant Lands in SEZs</u>
		<u>(acres)</u>	<u>(lots)</u>	
STPUD				
Residential	2500.0	1,212	3,627	48.5
General Commercial	403.7	100	172	24.8
Tourist Commercial	200.6	34	64	16.9
Others	N.A.	N.A.	266	N.A.
			<u>4,129</u>	
DCSID				
Residential	1177.0	131	130	11.1
General Commercial	76.8	15.1	1	19.7
Tourist Commercial	93.0	62.5	2	67.2
Others	N.A.	N.A.	165	N.A.
			<u>298</u>	

¹The lot figures were determined by TRPA during the summer of 1978 by comparing existing land use maps with zoning designations against maps of the land capability. Lands classified as Class IB were interpreted to be stream environment zones. Stream environment zones do occur in other land capability classes, besides IB, so that the above figures are low estimates. Nevertheless, the majority of the acreage in stream environment zones is expected to be covered. Acreage measurements were made by Sedway/Cooke using the same data sources, except for the "others" category.

Coverage Limits. The land capability classification system divides lands in the Tahoe Basin into seven capability classes. High hazard lands (classes 1 and 2) are characterized by steep slopes and a fragile environmental balance, with unique plants and animals. These lands should remain in their natural condition. Moderate hazard lands (class 3 and 4), characterized by moderately steep mountain slopes, will allow certain uses but not others. The high runoff potential of class 3 lands requires that any development of these areas be kept to a very low density. Low hazard lands (class 5 through 7) are areas of gently sloping foothills and plains with deep soils.

To transform the limitations on land-surface modifications for each land capability class into a single numerical index that characterizes development capacity, each class is assigned a numerical value representing the percentage of each area that can be used for impervious cover if environmental balance is to be maintained.

Allowable land coverage by capability class is as follows:

Capability Class	Allowable Percentage of Impervious Cover
7	30
6	30
5	25
4	20
3	5
2	1
1	1

Impervious surface is defined to include all disturbed areas.

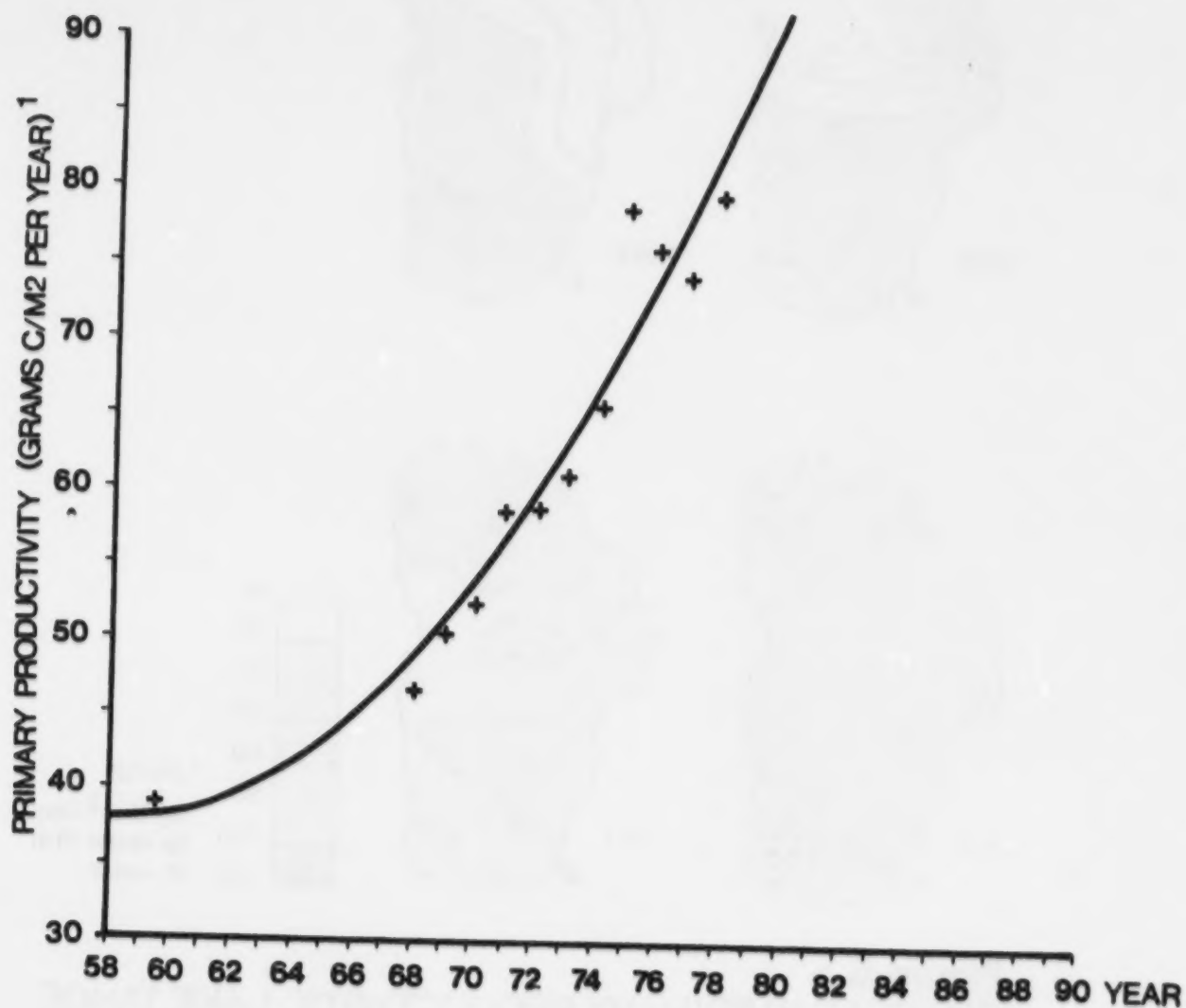
The inventory of problems by TRPA reveals that while HEHL are most vulnerable to land disturbance, development in low hazard lands also generates a substantial increase in the nutrient and sediment loading. The ordinances developed by the regional planning agencies identify the percent of land disturbance that can be tolerated in a given land capability class: the higher the class (i.e., the more tolerant of development activities), the greater the percentage of ground coverage permitted. Thus, in Class 1a or 1c (HEHL), the allowable impervious surface coverage is only 1 percent of the area of the site. By permitting developers to exceed these coverage limitations, sediment and nutrient loading are accelerated.

Algal Growth. The rate of algal growth (primary productivity) measures the growth of algae and reflects changes in the nutrient content of the lake. Algae are plants of the simplest form, and their basic function is to convert inorganic materials suspended in water into organic matter. Algal growth is a natural process; however, overproduction can result in undesirable odors, scums, and loss of light in the Lake. Cold, clear lakes such as Lake Tahoe tend to support little algae. Techniques commonly used to measure algal growth are not sensitive enough to detect the low levels of Lake Tahoe.

Nutrient concentrations are often used to indicate the "fertility" of a water body. Existing levels in Lake Tahoe comply with standards aimed at preventing aquatic growths that adversely affect beneficial uses. Nevertheless, an unprecedented rate of algal growth has been observed. Between 1958 and 1968, the rate of algal growth rose 1.8 percent per year. Over the next ten-year period, total annual primary productivity increased nearly 7.5 percent per year. This rate of algal growth occurred in spite of the exportation of sewage, the major source of nutrients, since 1968. Past and recent trends are shown in Figure 7. (Note: Recent information from the Tahoe Research Group indicates the rate of algal growth has continued to climb. In 1979, primary productivity was 80.7 grams C/m²/year; in 1980, 95.9 grams C/m²/year. These figures represent an 18.8 percent increase between 1979 and 1980.)

The only factor that can account for the dramatic rise in primary productivity is the increase in nutrient loading to the lake resulting directly from land disturbance. According to studies undertaken to document this relationship, algal growth is greater at the mouths of tributaries draining urbanized watersheds, and algal growth stimulating nutrients from land under well-developed conditions was far in excess of those from land under natural conditions. Figure 8 shows changes in algal growth and where the changes occurred between 1968 and 1971. (Goldman, 1974; Goldman and DeAmezaga, 1975 a, b; Sedway/Cooke, 1979; Leonard, in press.)

Figure 7
TOTAL ANNUAL PRIMARY PRODUCTIVITY IN LAKE TAHOE



Measured at Tahoe Research Group Index Station.

¹ grams C/m²/year = grams of carbon assimilated by algae per square meter of Lake Tahoe water per year. The technique of injecting a known amount of ¹⁴C into a lake sample, measuring how much is used (assimilated) by algae in a four hour period, and then calculating the consumption of ¹²C (which is based on the consumption of ¹⁴C) is the only one sensitive enough to measure the growth rate of algae in Lake Tahoe

Source: Charles Goldman, Tahoe Research Group, Preliminary Unpublished Data.

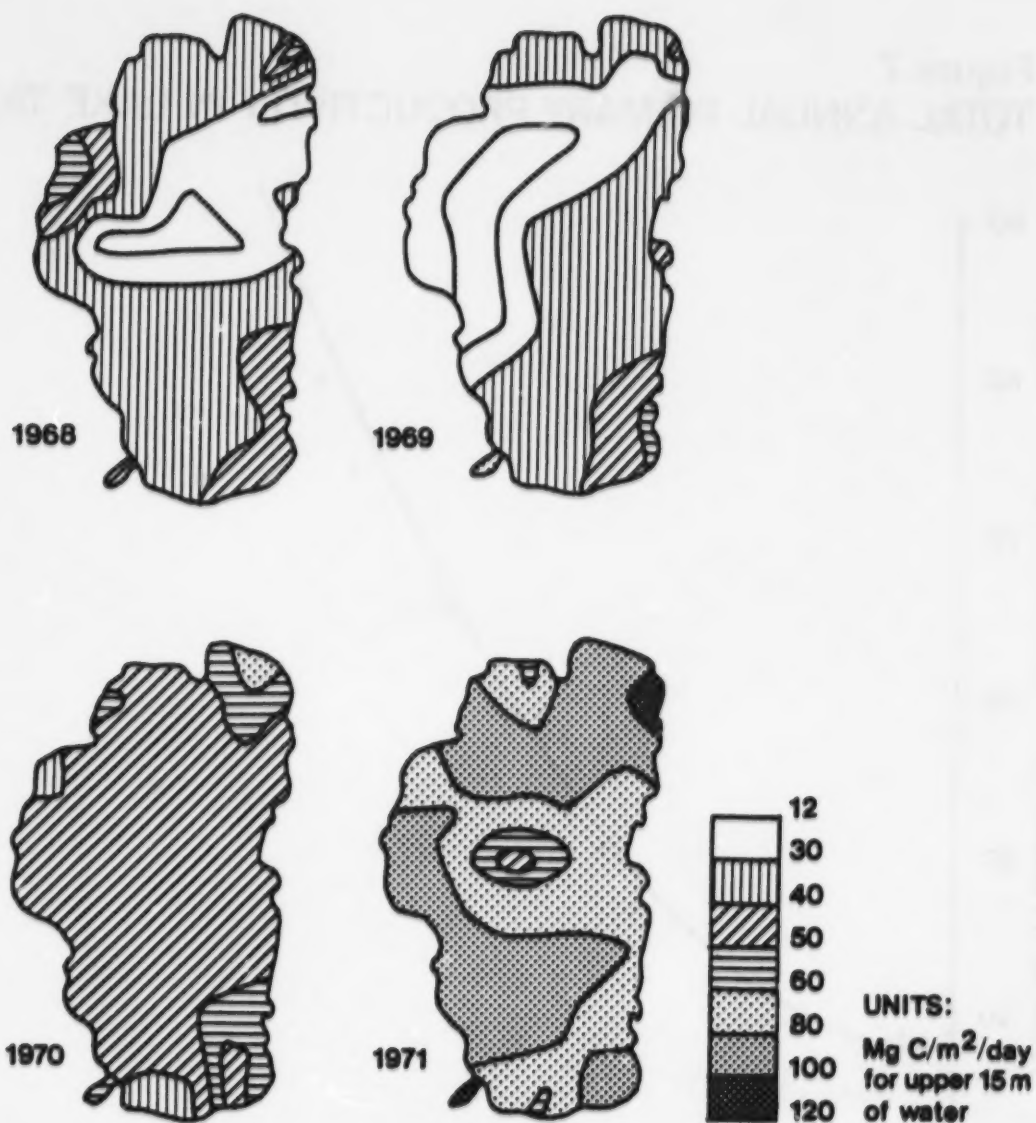


Figure 8
CHANGES IN PRIMARY PRODUCTIVITY: LAKE TAHOE

Source: Charles Goldman and Evelyne de Amezaga, "Spatial and Temporal Changes in the Primary Productivity of Lake Tahoe, California-Nevada between 1959 and 1971," *Verh. Internat. Verin. Limnol.* 19, 812-825.

As additional information becomes available, man's presence in the Lake Tahoe Basin is having a noticeable effect on lake quality. Continued land disturbance will result in a steady influx of sediment and nutrients that will, in turn, stimulate algal growth. Both periphyton (attached algal growth) and phytoplankton (suspended microscopic algae) communities have become more noticeable, particularly in the near shore areas. Such growths will not only detract from the visual appeal of the lake but also from the desire for body-contact recreation—both key beneficial uses of the lake.

In conclusion, the quality of Lake Tahoe's waters is excellent. It is for the most part still what Mark Twain described as "the fairest picture the whole earth affords." Numerous studies have, nevertheless, suggested that conditions are changing. Although there is no comprehensive, coordinated monitoring program at the lake, individual programs are conducted by California, Nevada, U.S. Geological Survey, U.C. Davis and others. Their work, corroborated by other independent studies, reveal that the rate of algal growth is growing precipitously, that the lake's remarkable clarity is diminishing, and that these changes in water quality correspond to the amount of land disturbance and development in the basin.

Some of these effects may not yet have been detected. Prior to 1974, sewage was disposed within the basin, either by spraying or spreading on the land. Once deposited on the land, sewage nutrients may enter the lake via surface runoff or groundwater flows. Naturally, if the nutrients are transported by surface flows, they would enter the lake much sooner; the point, however, is that nutrients being transported via the groundwater may only manifest themselves in the future. Moreover, the great volume of the lake relative to annual loadings means that the water quality will change only slowly. Because the lake responds slowly to increased nutrient loading rates, deterioration of water quality is hard to detect over short periods. It may take decades or even centuries for the effect of increased loading rates to be fully realized. Once deterioration has begun, it will take a long time to reverse. In these circumstances, any deterioration in water quality must be taken seriously and prompt action should be taken to correct the problem. Increased algal growth rates measured after an increase in nutrient loading rates indicate trends which will continue for many years if nutrient loading rates continue at their higher level. (SWRCB, 1980)

Continuation of Comments/Response

Comment: Impact assessment needs to stress that land disturbance will adversely affect environmentally sensitive lands. Moreover, the TRPA model used to predict deterioration of water quality underestimates the severity of the problem. (LTSLT, LRWQCB)

- **Response:** The following discussion revises and replaces the impact assessment in the DEIS, pages 93-99.

3. IMPACT ASSESSMENT

Question: To what extent will development encroach upon high erosion hazard lands?

Measurements

	1978	1	Growth Scenarios				5
			2	3	4		
Vacant residential lands in high erosion hazard areas (acres)							
STPUD	611	The percentage of acres to be developed under each scenario cannot be determined, except under buildout conditions when all vacant land would be developed (Scenarios 2 and 5 for STPUD and Scenarios 4 and 5 for DCSID).					
DCSID	552						
Impact rating		Medium	Medium	High	Extreme	Extreme	

High erosion hazard areas are defined as land capability levels 1a, 1c, and 2. It cannot be said with any certainty how much vacant residential high erosion hazard land will be developed. It is assumed that this measure gives some indication of erosion potential; it does not give an indication of actual sediment yield. Furthermore, it does not account for the contribution of capability classes 1b, and 3 through 7.

Description

Development in areas highly susceptible to erosion will adversely affect lake quality by reducing clarity and stimulating algal growths as described earlier under "Effects of Urbanization." Large sediment plumes carrying nutrients have been detected at the mouths of tributaries draining areas undergoing construction and land disturbance. Sediment and nutrient yield will vary according to the percent disturbance and the site's land capability. For example, the following estimates were made by the State Board:

<u>Land Capability Class</u>	<u>Percent Disturbance</u>	<u>Sediment Yield (tonnes/hectare/year)</u>
2	1	.25
	10	2.1
	100	21
7	1	0.035
	10	0.2
	100	11

In STPUD's service area, the 611 acres of vacant land in high erosion hazard areas is only a quarter of the total vacant residential acreage. It is possible for development under Scenarios 1, 3, and 4 to avoid all high erosion hazard lands. However, it is more likely that some development would occur in these sensitive areas. In DCSID's service area, nearly half of the remaining vacant residential land is in high erosion hazards areas and adverse impacts can be expected even at low levels of development.

Critical Implications

Land development, especially in the DCSID portion of the basin, would create problems of erosion and sedimentation and would stimulate algal growth in the lake. Erosion rates many times more than natural background levels have been measured in the basin (see Demonstration of Erosion and Sediment Control Technology, prepared by the California State Water Resources Control Board in 1978). Based on such studies of other watersheds in the basin, sediment and nutrient concentrations of runoff will increase dramatically as these areas develop. Among the many factors influencing the severity of impacts (as well as the effectiveness of proposed mitigation measures) are the following critical ones:

- o level of development on high erosion hazard lands,
- o level of development on stream environment zones,
- o degree of coverage and disturbance in any developed area, and
- o extent of remedial or onsite control measures to reduce existing levels of pollutant loading.

Problems in the Kingsbury Grade area are particularly acute because it is a watershed that has much of its vacant land in erodible areas. Development in high erosion hazard lands is impossible without increasing erosion, and thereby increasing sediment and nutrient loading.

Question: To what extent will development encroach upon SEZs?

Measurements

		<u>Growth Scenarios</u>			
	1	2	3	4	5
<u>STPUD</u>					
Percent of vacant residential lots in SEZs likely to be developed	19	100	53	19	100
<u>DCSID</u>					
Percent of potential housing units in SEZs likely to be developed	12	12	50	100	100
Impact rating	Medium	High	High	High	Extreme

SEZs are areas influenced by the presence of streams and near-surface groundwater. For a simple definition, it was assumed these areas, to a large extent, correspond with areas classified 1b, according to the U.S. Forest Service and TRPA devised land capability system. 1b lands are defined as areas that are poorly drained. There are SEZs in other land capability classes, but it was felt that the 1b elands would provide an accurate enough estimate of SEZ lands.

The estimate on the number of lots falling within SEZs was based on work prepared by TRPA in the summer of 1978. The zoning designation for each vacant lot was determined and the results are shown below:

<u>Zoning</u>	<u>STPUD</u>	<u>DCSID</u>
Low Density Residential	2815	81
Medium Density Residential	620	3
High Density Residential	188	27
Rural Estate	4	19
General Forest	239	155
General Commercial	172	1
Tourist Commercial	64	2
Conservation Reserve	12	4
Recreation	8	5
Public Service	7	1
	<u>4129</u>	<u>298</u>

The likely development of these vacant lots under each growth scenario was based on a cursory market analysis and in accordance with regional land use policies. These allocations were then summed to arrive at a total figure for the amount of

residential lots or units developed. Under buildout conditions, it was assumed that all lots would be developed. Under scenarios with only partial buildout, it was assumed that 34 percent of development in STPUD would occur in SEZs. This is consistent with CTRPA's experience over the past 3 years. For DCSID, a simple ratio was used to estimate future development in SEZs. Within each major traffic zone, the ratio of available housing units in SEZs to total available housing units was determined. If the ratio was 20 percent, then 20 percent of the development allocated to the traffic zone would be in SEZs. Likewise if the ratio were 4 percent, then 4 percent of the development for that traffic zone would be in SEZs.

The figures understate the level of construction in SEZs because there is also commercial development in SEZs. It should be noted that estimates of urban encroachment on SEZs are based on past development trends. Future development in SEZs may be curtailed by pending actions to protect environmentally sensitive areas. Such actions, if they were to prohibit development in SEZs and HEHLs, would avert damage in these areas. However, they may not necessarily reduce demand for sewage treatment plant capacity for three reasons: first, visitors will continue to come to the basin; second, it has been observed that the occupancy factors (the number of people in a given dwelling unit) has been rising; and third, various mechanisms may be implemented that allow property owners of such lands to transfer their development potential onto lands more suitable for development.

Description

Under the low growth scenarios for STPUD, SEZs around the state line, Tahoe Keys, and the northern part of Montgomery Estates would be subject to development pressures. Under Scenario 3, SEZs in the northern part of the Bijou, Tahoe Paradise would also be subject to urban encroachment. The affected SEZs in the DCSID area are predominantly in the Kingsbury area.

Development in SEZs would result in vegetation removal and land disturbance and, consequently, in erosion. Urban runoff, sedimentation, and nutrient input from erosion would accelerate eutrophication in Lake Tahoe and decrease its value as a fish and wildlife habitat. These impacts have the effect of diminishing the natural beauty of the basin and its attractiveness as a recreational area.

SEZs currently serve an important role in removing pollutants from surface runoff. Development in these sensitive areas will eliminate this natural capability for water treatment and consequently result in higher sediment and nutrient loadings. As noted in the proposed Water Quality Plan and the TRPA DEIS, development in SEZs also creates erosion problems by concentrating surface runoff and by disturbing areas subject to periodic inundation by surface runoff.

Critical Implications

Critical damage will occur in SEZs at growth levels projected under all scenarios. In particular, growth levels anticipated under Scenarios 2 and 5 would result in complete development of all lots in SEZs in the STPUD areas; under Scenarios 4 and 5, the situation in DCSID would be similar. If development patterns occur as estimated for Scenario 3, half of all SEZs in the south shore area would be converted to urban uses. Functioning meadowlands (i.e., those providing effective treatment) in the south shore area, Blackwood Road Drainage and Trout Creek, would be disturbed and possibly eliminated.

Question: How will urbanization of the basin affect pollutant loadings and lake water quality?

Measurements

	Existing	1	Growth Scenarios			5
			2	3	4	
Pollutant Loadings (metric tons/year)						
Suspended Solids	60,800	The loadings under each scenario have not been determined except for buildout conditions.				83,900
Total Nitrogen as N	383					528
Total Phosphate as P	606					835
Total Iron	3,927					5,418
Impact rating		Low	High	Medium	Medium	Extreme

The impact assessment in the DEIS relied upon models used by TRPA in its regional water quality planning effort. Subsequent review of those models by the State Board in conjunction with the consultants who originally developed them for TRPA led to several conclusions:

- The sediment yield model only projects changes resulting from subdivision of currently unsubdivided land and does not project changes resulting from buildout of existing subdivisions.
- The sediment yield model cannot be used to predict changes based on land capability or the percentage of an area which is disturbed.
- The sediment yield model overestimates erosion occurring under natural conditions.
- The pollutant concentration model cannot accurately predict nutrient concentration in the lake.

Consequently, the pollutant loadings under buildout conditions are amended to reflect the State Board's revised model.

Buildout is based on the TRPA General Plan land use policies, allowing for new subdivisions. (Buildout of existing subdivisions would generate 72,000 metric tons/year.) The suspended solids figure includes an estimated 10,000 metric tons per year from forest land disturbances, and approximately 5,530 metric tons per year from jeep trails, in addition to the loading from natural conditions and from the present level of development.

The values reflect changes not only in the STPUD and DCSID service areas, but also in the rest of the basin. This means that the affect of urbanization in the EIS study area alone cannot be isolated, but as one of the major growth centers in the basin it can be assumed to contribute a large portion of the increases in pollutant loading.

The pollutant loadings for Scenario 5 are based on assumptions that runoff quality, runoff volumes, and management practices will not change from existing conditions. Thus, the only factor causing changes in loadings between present

levels of development and buildout is land use. Intermediate levels of development as represented by Scenarios 1 through 4 will result in increased loadings. Exact figures cannot be provided, although the scenarios can be ranked relative to one another, based on the projected level of development. This relative assessment provides the basis for the impact ratings.

Description

The increased suspended solids loading would be particularly noticeable in near-shore areas where it would reduce clarity of the water, disturb fish and wildlife habitat, and detract from aesthetic enjoyment of the lake. The State Board's model projects a 38 percent increase in sediment loading over present levels. The model projects a similar increase in nutrient loadings.

Changes in pollutant loadings for specific watersheds within the service areas of the districts are presented below. The figures, based on TRPA's model, show annual loadings by the year 2000. The intent of including these values is to note the relative changes and not to focus on the values themselves. The greatest percentage change in loadings are seen in the Burke watershed in DCSID and in the Bijou, Trout and Upper Truckee watersheds in STPUD. The loadings from STPUD and DCSID for sediment and nutrients represent 50 percent or more of the total basin loadings.

NUTRIENT AND SEDIMENT LOADINGS BY WATERSHED LAKE TAHOE BASIN

#	Watershed Name	Suspended Solids (Kg×10 ⁺⁶)		NO ₃ -N (gm×10 ⁺³)		Total Nitrogen (gm×10 ⁺⁶)		Total Phosphate (gm×10 ⁺⁶)		Total Iron (gm×10 ⁺⁶)	
		Existing Land Use	General Plan	Existing Land Use	General Plan	Existing Land Use	General Plan	Existing Land Use	General Plan	Existing Land Use	General Plan
DCSID											
27	Deadman Pt.	0.02	0.02	9	9	0.06	0.06	0.03	0.03	0.11	0.11
28	Slaughter House	0.25	0.25	100	100	0.75	0.75	0.37	0.37	1.19	1.19
29	Glenbrook	0.40	0.34	107	77	0.75	0.57	0.39	0.31	1.30	0.84
30	North Logan House	0.08	0.06	25	23	0.20	0.18	0.11	0.09	0.27	0.27
31	Logan House	0.12	0.12	46	46	0.36	0.36	0.18	0.18	0.51	0.51
32	Cave Rock	0.05	0.05	17	16	0.14	0.13	0.07	0.07	0.17	0.16
33	Lincoln	0.12	0.12	42	42	0.34	0.33	0.18	0.18	0.44	0.43
34	Skyland	0.10	0.17	22	36	0.21	0.33	0.12	0.20	0.11	0.12
35	North Zephyr	0.10	0.11	41	46	0.33	0.40	0.16	0.19	0.57	0.70
36	Zephyr	0.31	0.10	53	35	0.37	0.32	0.20	0.17	0.71	0.49
37	South Zephyr	--	--	--	--	--	--	--	--	--	--
38	McFaul	0.30	0.33	84	97	0.70	0.81	0.39	0.52	0.71	0.93
39	Burke	1.06	1.29	188	249	1.44	2.15	0.94	1.53	2.15	2.94
40	Edgewood	1.82	2.41	322	387	2.34	2.76	1.38	1.72	3.18	3.80
STPUD											
41	Bijou Park	3.28	3.23	405	422	2.70	2.82	1.79	1.94	3.66	4.04
42	Bijou	0.88	1.42	168	231	1.58	1.93	1.00	1.30	1.32	2.06
43	Trout	4.34	5.28	1,484	1,617	11.86	13.07	6.17	7.07	16.52	17.22
44	Upper Truckee River Camp	15.34	16.73	4,304	4,483	35.59	37.75	19.78	21.34	46.82	47.57
45	Richardson	0.54	0.49	142	138	1.25	1.23	0.66	0.65	1.89	1.85
46	Taylor Creek	3.40	3.50	1,292	1,306	9.94	10.05	5.12	5.07	14.65	14.66
47	Tollac	0.60	0.61	225	239	1.76	1.99	0.90	1.07	2.66	2.74
48	Cascade	0.83	0.83	350	349	2.62	2.60	1.29	1.26	4.30	4.31
49	Eagle Creek	1.54	1.54	655	655	4.87	4.87	2.36	2.36	8.10	8.10
Total		35.48	39.0	10,081	10,603	80.16	85.46	43.59	47.62	111.34	115.04
Percentage Increase		9.9		5.2		6.6		9.2		3.3	

¹ Values are included with Watershed #36.

Source: Tahoe Regional Planning Agency, Lake Tahoe Basin Water Quality Management Plan, Vol. III, 1977.

Critical Implications

See discussion above.

Question: How will accelerated eutrophication affect Lake Tahoe?

Measurement

(Note: The DEIS relied on the TRPA model which attempted to evaluate nutrient concentration changes to the lake. These predictions were then used to estimate primary productivity and finally changes in water clarity. Quoting from Mr. Lawrence Klapow, Environmental Specialist at the Public Utilities Commission,

Indeed it is the opinion of competent scientists, who have studied Lake Tahoe over many years, that it is not yet possible to forecast precisely changes in lake productivity. What can be said, with certainty, is that increasing nutrient loads will stimulate additional eutrophication. . . To go beyond such simple statements to predict quantitative changes, is beyond our present knowledge.

Accordingly, the State Board (Lake Tahoe Basin Water Quality Plan, 1980, p. 37) examined the effect of nutrient concentrations in the lake.)

Estimates of natural loadings

"combined with the knowledge that the increase in equilibrium concentration will be proportional to the increase in loading rates, provide a basis for estimating the percentage increases in pollutant concentrations above natural concentrations. . . continuation of loadings associated with either the present level of development or full buildout of the Basin could ultimately increase the concentration of nutrients in Lake Tahoe by a few hundred to over two-thousand percent above natural levels.

When the loading rate of a nutrient is increased, the approach to a new equilibrium concentration in the Lake is not immediate. Due to the large volume of the Lake, nutrient concentrations build up over an extended period after nutrient loading rates are increased. Thus, the full effects of increased loading rates on algal growth in Lake Tahoe are not likely to occur for several decades or even centuries. Nutrient loads must be reduced below present levels if increasing algal productivity is to be stabilized or reversed. The proper level probably is much closer to natural nutrient loading rates than to current loading rates."

Description

Existing levels of development have already resulted in water quality problems in the Lake Tahoe Basin. Increased development would accelerate the degradation of water quality in Lake Tahoe and its tributaries by increasing erosion and sedimentation and, hence, stimulate algal growth as described earlier under "Effects of Urbanization." Such impacts would be in violation of the federal

nondegradation policy. The most severe problems would occur in near-shore waters adjacent to dense urban development. Because the sunlight can reach the bottom near the shore, near-shore waters can support the growth of attached algae, or periphyton. This type of algae can be readily seen on hard surfaces, rocky bottoms, pier pilings, and boats. Heavy accumulations of such growth can be a nuisance as well as detract from the lake's appearance. Violations of state and federal water quality standards for algal productivity, plankton counts and algal growth potential have been recorded.

(Note: Following the conclusion reached by Mr. Klapow, an identification of specific effects on lake clarity cannot be made. Yet, it is clear that the greater the land disturbance, generating greater nutrient loadings, the more serious the impacts will be. As is apparent by now, any development will accelerate erosion and thus affect water quality. Among the scenarios, those that are associated with greater levels of development will have the most serious implications for the quality of the lake. Present knowledge does not permit a more definitive or quantitative assessment.)

Continuation of Comments/Response

Comment:

- Development in SEZs and HEHL and high erosion hazard lands must be prohibited; restricting development is not enough. The effectiveness of imposing development restriction, in SEZs and HEHL is limited without also addressing existing erosion and drainage problems. (CTRPA, LRWQCB, TRPA, LTSLT)
- Best management practices such as slope, stabilization, and revegetation are obsolete and better techniques that exist should be considered. (Reily)

Response: Mitigation under the National Environmental Policy Act and CEQA process calls for measures to ameliorate or eliminate those adverse impacts resulting from implementation of the proposed action. In the Lake Tahoe Basin, a number of other programs are being coordinated with the mitigation program, so that, in effect, remedial measures are closely integrated with measures to avoid future problems. In terms of water quality, the EIS is consistent with the proposed Lake Tahoe Basin Water Quality Plan.

Proper construction techniques and drainage systems, such as infiltration trenches, drainage improvements, and erosion control devices, can reduce erosion and surface runoff from development on high capability lands. As documented by an erosion control demonstration project conducted by the State Water Resources Control Board however, the most important mechanism for controlling impacts of erosion and runoff is adherence to land capability. Engineering solutions to the water quality problems resulting from development of SEZ and high erosion hazard lands do not exist. Adverse impacts on water quality from future development can be avoided only if development is in accord with land capability constraints—development must not encroach on SEZ and must stay within land capability coverage limits on all land capability levels.

Even development on high capability lands, in accordance with coverage restrictions and other best management practices, will lead to some increases in surface

erosion. Development also results in increases in subsurface nutrient migration. Thus, while development on high capability lands has less impact than development of SEZ and high erosion hazard lands, there still is more impact which must be mitigated.

The water quality impacts of development on high capability lands can be mitigated if future development is offset by remedial projects addressing existing erosion and drainage problems. Treatment of existing problems provides a means of mitigating adverse impacts of the proposed project.

The basic concept embodied in an offset program is that the increases in erosion and runoff caused by new development should not be permitted unless remedial erosion control projects are built which reduce erosion and runoff from existing sources by an equal or greater amount. The SWRCB's Final Lake Tahoe Basin Water Quality Plan proposes an offset program which would tie the number of permits issued for new development to the progress of remedial erosion control projects, so that upon completion of all permitted development, completion of all necessary remedial erosion control projects is assured. The result would be a net decrease in sediment and nutrient loadings. For further details refer to pages 167-172 of the State Board's Water Quality Plan (October 1980). The Amendments proposed to TRPA's Water Quality Management Plan recommended a more limited offset requirement, requiring only enough remedial projects to assure there is not net increase in sediment and nutrient loadings.

CTRPA in its 1980 Regional Plan imposes a temporary prohibition on development within SEZs. CTRPA has implemented a permit allocation procedure using a random selection technique. However, property owners of land within land capability districts 1 through 3 would not be eligible to build. In exchange, they would be given the opportunity to transfer or sell their development rights. Combined, these measures, effectively curtail development in SEZs until the Bistate Compact environmental threshold carrying capacity study is complete.

For greater detail refer to Appendix B of this FEIS.

Comment: The monitoring program is useful but should not be treated as a mitigation measure. U.C. Davis should not be included as a responsible agency for implementation of water quality monitoring mitigation. (page 102) (LRWQCB, Brecher, NDEP, TRPA, LTSLT, U.S. Forest Service)

Response: A common remark on the mitigation program is that it did not provide any means for monitoring the effectiveness of the various measures. While the monitoring program would not offset any of the environmental consequences of the proposed action, it does offer a useful tool for evaluating the other efforts.

U.C. Davis was only mentioned as a possible agency that might be involved in a monitoring program. It was mentioned because of its past and present monitoring activities at the lake. It is presumed that they would be asked to participate as an independent, private contractor.

Comment: Transfer of development rights as a mitigation measure (page 103) is unworkable since its basic function is to promote future development (Brecher); transfer of development rights is a good idea and should be considered along with a

separate offset policy (LRWQCB, TRPA); the legislature should be listed as a responsible agency, and neither TRPA nor CTRPA have financing to acquire land banks which could be used for transfer of building sites (SLT).

Response: The implementation of a scheme for the transfer of development rights would be difficult, as is stated in the DEIS (page 104). The market demand for a piece of land that is designated SEZ may be lacking. Yet, there are options to an entirely private market system. CTRPA, for example, offers property owners of low capability lands the opportunity to transfer development credit to high capability lands or to sell the land and its development rights to a public agency. Various funding sources that can be used by local governments are described in the next response.

The comment by Mr. Brecher implies that the transfer of development rights should be used to halt future development. If one adopts this posture, then perhaps the concept is unworkable. It is suggested, however, that the concept be seen as a way of promoting future development in areas that are more suitable to accommodate it, thereby relieving development pressures on environmentally sensitive lands.

A summary of the offset concept is included on page 106.

Comment: The DEIS should not dismiss landowner compensation, land acquisition, and regulatory solutions as mitigation measures. It should include a detailed cost/benefit analysis of compensation versus sewer expansion and should recommend funding sources to implement landowner compensation. (pages 101-104) (LTSLT, CTRPA, SLT)

Response: There are a number of existing or proposed purchase/compensation programs, including Forest Service purchases, City of South Lake Tahoe purchases, the Santini-Burton Bill and the California Tahoe Conservancy Agency. Each program is distinct, having different funding sources, purchase criteria, motivations, goals and political support. The weighing of costs and benefits can only be done by reference to a specific plan and the goals of the sponsoring agency. Each agency contemplating a purchase/compensation program must determine whether the cost of its program are worth the benefits it will yield. Depending upon the motivations and goals of the agency, the identification and valuation of benefits could vary.

For reference, one recent effort which investigated funding sources and mechanisms to implement landowner compensation was the California State Water Resources Control Board's Water Quality Plan for the Lake Tahoe Basin. Also CTRPA's recent Regional Plan Update and related work considered these topics. The Plan initiates a permit allocation procedure. Those whose lands are not eligible for development are offered three options:

- transfer development rights to a higher capability lot,
- sell them to owner of such a lot, or
- sell the lot and its development rights to a state or federal agency.

Comments: Mitigation measures for water quality protection may be appropriate for low growth scenarios, but are inadequate for full buildout. (Moser)

Response: The mitigation measures needed to protect water quality will themselves prevent full buildout.

Under a buildout situation, environmentally sensitive lands would be built upon, SEZs would be disrupted and pollutant loadings to the region's water resources would greatly increase. These impacts cannot be mitigated without controls which have the effect of limiting the amount of development permitted. Construction techniques do not exist which would permit development of environmentally sensitive lands without major increases in erosion and surface runoff. Nor would it be possible to offset new development on these lands through construction of a remedial project and still assure protection of water quality. Maintaining the existing water quality of Lake Tahoe will require that sediment and nutrient loadings be reduced to a fraction of current levels, and there are limits on the effectiveness of remedial projects. It will not be possible to achieve the reduction in sediment and nutrient loadings necessary to protect water quality unless new inputs are kept to a very low level.

Comments: The proposed mitigation measures have problems in implementation and none are guaranteed to be effective. They need to be reviewed in light of the costs of implementation and the likely financing sources. In addition, before proceeding, enforceable commitments are needed. (Ca. Department of Fish and Game, SLT, NDEP, SWRCB, CTRPA)

Response: No measures are guaranteed to be effective. For this reason, EPA is looking for more than just a verbal acceptance to a measure. The mitigation program now being formulated requires firm commitments in terms of budget, personnel, and time schedules before any federal assistance can be approved. The mitigation program is described in detail in Appendix B of this FEIS.

As noted in several earlier responses, a number of reports has recently been released which address the issues of funding sources. In particular, the California Lake Tahoe Basin Water Quality Plan is suggested for consideration.

GEOLOGY AND SOILS (pages 105-108)

Comment: The discussion of seismic hazards is limited to faults and does not address seismic hazards associated with various soil types. Also, the fault along the base of the Carson Range has an estimated potential of 8.0-8.5, not 7.0, on the Richter scale. (pages 105-108) (Douglas County Planning Department)

Response: Detailed information on the soil types is documented and is available in other reports. Soil erosion and sedimentation is much more prevalent and damaging to the environment and consequently these aspects of the soils have been focused on. However, as the County indicates, because of the area's designation as an active geological zone, seismic hazards from ground shaking and subsidence must be assessed in accordance with local general plans and environmental review procedures.

For an assessment of the seismic response of various soils in the study area, the following reports are suggested:

- Soil surveys prepared by the U.S. Soil Conservation Service (Soils of the Tahoe Basin, 1971; Soil Survey - Tahoe Basin Area - California and Nevada, 1974; Soil Survey - Carson Valley Area - Nevada and California, 1971).
- R. Messier and S. Ebrathim, Geological Reconnaissance of the Carson Range near Carson City, Nevada, 1964.
- California Division of Mines and Geology, Geologic Map of Lake Tahoe, 1967.
- Robert Matthews, Geologic Hazards of Lake Tahoe Basin Area, 1968.
- Tahoe Regional Planning Agency and U.S. Forest Service, Geology and Geomorphology of the Lake Tahoe Region, 1971.
- Douglas County, General Plan, 1974.
- Recent environmental impact reports such as the one prepared for the STPUD Wastewater Facilities Planning Program, 1978.
- Seismic Safety Elements of local/regional general plans.

Beginning with the last sentence of the first paragraph of page 108, the text should be revised to read:

- The fault has an estimated potential of 7.0 - 8.5 on the Richter Scale.

Related hazards associated with seismic occurrences involve ground shaking and ground failure. The severity of these hazards depends on the soil type, the proximity of the earthquake epicenter, the magnitude of the event, and the subsurface conditions. Specific analysis of the threat imposed by these hazards should be done in accordance with local plans, regulations, and environmental review procedure.

Comments: There is no discussion of the impacts on prime or agricultural lands, including the effects of wastewater use for irrigation. (U.S. Soil Conservation Service)

Response: A major assessment of the impacts of wastewater application to agricultural lands was prepared by both wastewater agencies, as land application is the preferred disposal method in each case. Evaluation of the projects' impacts are, therefore, contained in the environmental assessments prepared by the individual wastewater districts. A brief summary of those assessments as well as the loss of agricultural lands from urbanization are contained in the DEIS on pages 214-219, 250, and 256-257.

Further evaluation of STPUD's land disposal plan was prepared as part of the Facility Plan Update Technical Appendix, December 1980. A summary of that document is presented in the updated description of STPUD's recommended alternative (see Chapter III). The Soil Conservation Service assessed the implications of land application of wastewater in Alpine County in November 1980 and reported there would be no loss of prime and unique farmland and that irrigators might achieve increased yields by being able to irrigate into the summer months.

Further evaluation of DCSID's land disposal plan can be found in a report prepared by Charles Knapp for the district, Evaluation of Soils and Land Ownership in the Carson Valley Area, Nevada for Wastewater Disposal Using Agricultural Irrigation. The report evaluated the feasibility of agricultural use of treated effluent, concluded it is technically feasible, and recommended areas especially suitable for agricultural disposal. More recent information is described in the Supplement to Draft Facility Planning Report for Wastewater Management, Grant No. C32-0140 (Creegan & D'Angelo, November 1980). The supplement generally discusses the experience with land application during the growing season on the Settelmeyer Ranch in the Carson Valley and with a full scale demonstration project of land application during the winter. The results of the demonstration project concluded that year-round application of DCSID's effluent to Settelmeyer's Ranch is feasible without adverse effects on groundwater, soil, or vegetation.

BIOLOGY (pages 109-119)

Comment: A more comprehensive inventory of wildlife in the basin is needed, or if such inventories are already available, they should be identified. (Moser, NDEP)

Response: The Technical Appendices of the DEIS contain a detailed inventory of vegetation and wildlife in the basin, along with a general indication of how these resources have been affected by development. The resources in the Lake Tahoe Hydrographic Basin are described on pages 51-71 and in the Upper Carson River Basin on pages 253-269. Other inventories are identified in the bibliography (e.g., Orr's Mammals of the Lake Tahoe Region, Orr's and Moffitt's Birds of the Lake Tahoe Region, Stebbin's Field Guide to Western Reptiles and Amphibians, and TRPA's and the USFS's Wildlife of the Lake Tahoe Region).

Comment: Most of the unique and sensitive areas described in the DEIS are outside of the STPUD service area and therefore are not pertinent to the EIS. (page 110) (SLT)

Response: The intent of the DEIS was to examine the secondary impacts of the projects proposed by the district. These impacts of additional year-round residents and seasonal visitors extend beyond the district's service area. As a result, it was necessary to define a study area which would encompass areas likely to be affected by the project's implementation. These areas include the Lake Tahoe Hydrographic Basin and those portions of Carson Valley and Alpine County within the Upper Carson River Basin.

Comment: The U.S. Fish and Wildlife Service's list of plants proposed for threatened and endangered plants has been withdrawn and is now being treated as "candidate species." Of six plants species described in the DEIS, two are recommended for inclusion as threatened species. The discussion should be revised and an explanation offered why the list of sensitive plant species is different from that in the Lake Tahoe Environmental Assessment. (page 110) (U.S. Fish and Wildlife Service, SLT)

Response: Since the DEIS was prepared, the U.S. Fish and Wildlife Service's Sacramento Endangered Species Office has developed, in conjunction with the California Native Plant Society, Northern Nevada Native Plant Society, and several state and federal agencies, a candidate list of endangered and threatened plants for the Lake Tahoe Basin. The list published in the Federal Register (45 FR 242 December 15, 1980) considers Rorippa subumbellata and Draba asterophora var. asterophora, Draba asterophora var. macrocarpa, and Draba stenoloba var. ramosa as candidates for inclusion on the endangered and threatened species.

Lists maintained by other agencies and groups, such as the California and Nevada Native Plant Society and the U.S. Forest Service, contain additional plant species that those groups feel to be rare, endangered, or sensitive. These lists will vary among groups as well as from year-to-year. For example, the U.S. Forest Service sensitive species list currently contains eight species:

- *Carex paucifructa*
- *Draba asterophora* var. *asterophora*

- *Draba asterophora* var. *macrocarpa*
- *Draba stenoloba* var. *ramosa*
- *Lewisia pygmaea* ssp. *longipetala*
- *Navarettia prolifera* ssp. *lutea*
- *Rorippa subumbellata*
- *Silene invisa*

Some have recently been added, others that were identified in the Lake Tahoe Environmental Assessment or the DEIS have been subsequently removed from the U.S. Forest Service list (Reed, U.S. Forest Service, personal communication).

The list of plant species described in the DEIS represents those species of concern, at the time of preparation, as identified by the California and Nevada Native Plant Society or described in Powell's Inventory of Rare and Endangered Vascular Plants of California and Smith's "The Flora of the Tahoe Basin and Neighboring Areas." (See Bibliography of the DEIS for full citation.)

Comment: Osgood Swamp is not entirely on National Forest land. (page 110, par. 2) (U.S. Forest Service)

Response: The text in the DEIS makes no suggestions that Osgood Swamp is entirely on National Forest land. The text states that only a portion of the swamp lies on federal land.

Comment: The description of wildlife conditions is inconsistent with the WFRS report. The latter declares that the basin has "sensitive, but not endangered species." (page 159) The DEIS declares that the southern bald eagle is endangered along with the peregrine falcon. (page 113) (City of South Lake Tahoe)

Response: The Western Federal Regional Council's report states on page 159 that, "Sensitive, but not endangered species, include the prairie falcon, osprey, spotted owl, goshawk, and golden eagle." On page 158 of the same report, the following statement is made, "The bald eagle and peregrine falcon are endangered and the wolverine is rare. . . Human disturbance is believed largely responsible for their scarcity." The WFRS and DEIS are not inconsistent but in fact, identify the same endangered species and support one another in the observation that the natural resources have been adversely affected by insensitive development practices.

Comment: Protection of osprey nests is a worthy endeavor; however, it is not clear why they have been singled out for special consideration and why osprey habitat protection is not included with the general mitigation measure to protect vegetation and habitat. (NDEP)

Response: Ospreys, although not endangered, are rare in Nevada and because their habitats are limited and environmentally sensitive, they have been given special consideration. Mitigation measure #4 calls for a range of measures to protect vegetation and habitat, but does not contain specific guidelines that can be used to protect ospreys and their habitat. Because of the rarity and specialized habitats of ospreys special guidelines are identified and recommended in mitigation measure #3.

NOISE (pages 119-126)

Comments: Discussion of CTRPA's suit challenging PUC's decision to allow an unlimited number of flights into the Tahoe Basin should be updated and the implications of Airline Deregulation Act of 1978 should be addressed. (page 20) (CTRPA, SLT)

Responses: CTRPA's suit is now null and void since PUC no longer has control over flights in California. The Civil Aeronautics Board (CAB) can limit the type of aircraft serving a particular airport but has no jurisdiction over times and frequencies of flights. Since CAB itself is being phased out, the airport owners and operators currently appear to have jurisdiction through proprietary rights over times and frequencies of flights. Because jurisdiction is unclear at the moment, commuter airlines and airlines flying larger aircraft have been going to CAB to get exemptions. CAB still has some jurisdiction over interlining arrangements (transfer of passengers).

Comment: Figure 11, which shows noise contours for the airport in South Lake Tahoe and is taken from CTRPA's Transportation Plan omits the disclaimer regarding actual flight patterns. (page 121) (LTSLT)

Responses: Figure 11 was taken from the "Draft Community Noise Exposure Inventory (An Amendment to the Noise Element of General Plan," prepared by the El Dorado County Planning Department Staff in March 1979. This source did not include any disclaimer regarding actual flight patterns. The County's discussion of the figure cites a January 6, 1978 position paper by CTRPA as its source for the figure. Upon review of that position paper, no disclaimer could be found.

Comments: DEIS incorrectly uses dBA in discussing the number of residences affected by increasing flights. (page 124) (LTSLT)

- **Responses:** The statement should be revised to read:

As development occurs in the basin, particularly in the neighborhoods north of the airport, the number of residences exposed to noise levels greater than 60 dBA (CNEL) would increase far beyond the present number (less than fifty).

Comments: Actions taken by the Board of Supervisors and the airport director lack effective enforcement and consequently will not improve the noise environment. (page 124) (LTSLT)

Responses: This claim is valid and the County Board of Supervisors has acknowledged that the lack of an adequate noise monitoring system would prohibit enforcement of a noise ordinance. The last line should be amended to read:

- Such measures should be enforced as a means of controlling noise from airport operations.

Comments: The discussion of the Airport Noise Land Use Compatibility Study is not discussed in great enough detail. (page 124) (SLT)

Response: The efforts to prepare an Airport Master Plan and an Airport Noise Land Use Compatibility Study were just getting underway as the DEIS was being completed. Telephone conversations with the airport director and a review of current newspaper articles, when the noise section was being prepared yielded no additional information.

Both the Airport Master Plan and the Airport Noise Land Use Compatibility Study are apparently already completed, although nothing has been publicly released as yet. One public meeting has been held. (Balog, CTRPA, personal communication)

Comment: No substantiation is provided to support the claim that noise complaints against off-road vehicles have been increasing. (page 122) (SLT)

Response: This observation was made in an Environmental Impact Report on a proposed El Dorado Beach boat ramp, prepared by Pillsbury Associates, 1974.

Comments: Many of the mitigation measures suggested are difficult to implement and are ineffective. (LTSLT, SLT, NDEP, Caltrans, TRPA)

Response: The impact discussion addresses the consequence of continued development in the basin. Quite simply, a rise in the ambient noise level is anticipated. By trying to minimize the impacts of this rise in the ambient noise level, the DEIS attempted to mitigate the impacts from further development. The techniques available to do this would naturally involve improvements to the existing conditions. The mitigation measures are generally aimed at either insulating the noise receiver or controlling noise emissions from the source. Mitigation measures #2, 3, and 4 are of the former type. Through various site planning or construction modification techniques, they direct the noise receiver away from the noise source or better insulate the noise receiver. It should be noted that some approaches are more effective than others. For example, noise insulation standards are more effective at providing sound isolation between units. In an outdoor community like Lake Tahoe, such measures would be less appropriate. Similarly, much further investigation of noise barriers would be required before implementing such a measure. Various types of barriers are possible including sloping mounds of earth, walls and fences constructed of various materials. Earth berms which require land area are clearly inappropriate in the more densely populated areas; however, walls and fences using wood, masonry, or other materials can be effectively used on a site-by-site basis and their vertical construction makes installation possible when space is severely limited. Several agencies correctly indicated that such barriers often have negative impacts associated with them: they may be aesthetically displeasing, they may create access difficulties, they may impede snow removal operations, and they may be costly to install and maintain. However, building orientation, room arrangement, and shielding techniques (using other buildings or open spaces to attenuate noise) can be effective. These types of mitigation measures can be encouraged through the development review procedures, public information (many are unaware of how building design or orientation can affect the noise environment), and modifications to existing ordinances.

The second type of mitigation measure such as control of noise at the airport or control of noise levels through a noise ordinance are much more difficult to implement. The biggest reason for this difficulty is the inability to enforce the desirable noise levels. This is recognized in the discussion of Mitigation Measure #1 which notes a noise control ordinance would be highly effective if rigorously enforced. Although the specifics of such a noise control program are beyond the scope of the DEIS and consequently a detailed cost estimate cannot be provided, the discussion under cost (page 125) indicates the cost of a comparable program considered by CTRPA.

Comment: The relationship of transportation control strategies to noise abatement mitigation measures is not adequately addressed. (TRPA)

Response: Strategies to reduce traffic volume, as proposed in the transportation mitigation section, would reduce the ambient noise level; however, a substantial reduction would be required to effect a noticeable difference. Strategies that increase average vehicle speed would also increase ambient noise levels.

METEOROLOGY AND AIR QUALITY (pages 127-136)

Comment: The air quality discussion contains data from the Park Avenue and Highway 50 intersection that were never accepted as valid data. (pages 129, 132) (NDEP)

Response: The Nevada Division of Environmental Protection is concerned with the data because the accuracy and validity of the data was not verified. Also, details on the instrument and data collection methods were not provided. (Serdoz, NDEP, personal communication) The information supplied by Caltrans and used in the DEIS was collected using generally accepted procedures for monitoring air quality and calibrating the data. (Baker, Caltrans, personal communication)

Comment: Why is average 8-hour information included in describing existing carbon monoxide air quality conditions? (page 129, 132) (NDEP)

Response: The Lake Tahoe Air Basin is in noncompliance with the national ambient air quality standards because observed 8-hour average carbon monoxide concentrations exceed the 8-hour standards for carbon monoxide of 9 ppm. The 8-hour average information is provided because it allows straightforward comparisons with the standards for carbon monoxide.

Comment: There were only 13 days in 1977 that the federal CO standard was violated and only 4 days in 1978 at the Nevada site. Moreover, the CO standard has since been relaxed and this change should be made in the text. (page 29, par. 4) (NDEP)

Response: In the Nevada Ambient Air Quality Monitoring and Air Quality Trend Report-1977, sixteen violations of the 8-hour carbon monoxide standard are shown. However, these sixteen violations could have occurred during 13 days with multiple violations occurring on some of the days.

Text should be revised to read:

- The Lake Tahoe Basin is considered a nonattainment area for carbon monoxide (CO) (Nevada Department of Conservation and Natural Resources, 1977). In 1977 the 8-hour CO standard of 9 parts per million (ppm) was equalled or exceeded 16 times at the Nevada monitoring station in Stateline. At the nearby California Air Resources Board (ARB) site on Park Avenue, however, no violations were recorded during the same period and, in fact, the 8-hour CO average concentration was greater than 2 ppm only four times during the year. (The difference between these two monitoring stations can be explained by the 10 meter (m) height at the intake of the ARB station monitor. Consequently, the ARB monitor is an inappropriate measure of the concentrations to which the public is exposed.)

Comment: Table 29 does not contain the applicable Nevada Ambient Air Quality Standards. There are errors in the ozone, SO₂, Pb, visibility, and TSP standards. (page 130) (NDEP)

- **Response:** The Nevada Division of Environmental Protection was contacted to obtain the current Nevada state air quality standards. The changes in the new Table 29 reflect the current standards as of April 1980 as they were given by the NDEP.

Comment: The information in the first paragraph on page 131 appears to be leading up to a conclusion, but it never is addressed. (page 131) (NDEP)

Response: The text should be revised to read:

- Carbon monoxide concentrations vary both annually and diurnally in the Lake Tahoe Basin; therefore, mitigation measures adopted to improve current CO conditions should consider these variations. At the Nevada Stateline monitoring site in 1977, the highest daily peak 8-hour CO average (for a three month period) occurred for the January to March quarter (5.2 ppm). The fall quarter (October-December) was second highest with an average value of 4.6 ppm. The spring and summer quarters were similar at 3.8 ppm and 3.7 ppm, respectively. The most frequent inclusive hours resulting in the daily peak CO concentration were 12 midnight to 8 a.m. in winter (January-March), 2 a.m. to 10 a.m. in fall, 9 p.m. to 5 a.m. in spring, and 12 noon to 8 p.m. in summer.

Comment: The definition of the problem indicates a problem with ozone, but because of the new federal ambient air standards the basin is no longer a nonattainment area for ozone. (page 131, par. 2) (NDEP)

Response: In December 1977, the Lake Tahoe Basin was classified as nonattainment area for oxidants (Nevada Department of Conservation and Natural Resources, 1977). Nevada has relaxed its 1-hour oxidant standard from 8 pphm to 10 pphm in the Lake Tahoe Basin, in order to be consistent with California's standard. At the same time, the federal standard has also been relaxed to 12 pphm. The lower standards resulted in the reclassification of the basin as an attainment area for the federal ozone standard (see 46 Federal Register 14892, 3-3-81), although data collected in August 1978 by the California ARB recorded a 1-hour oxidant level of 10 pphm in South Lake Tahoe, which violates the local standard. The reclassification of the basin as an attainment area occurred after the DEIS was released.

Comment: The discussion of the Nonattainment Plan (pages 128-129, 134-135) should note that:

- the Plan as adopted by ARB is being challenged (SLT),
- the lead agency is to be recommended by local elected officials (SLT),
- the description of control measures does not reflect Nevada's position (NDEP).

Table 29 AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards ¹		Nevada Standards ¹		National Standards ²		
		Concentration ³	Method ⁴	Concentration ³	Method ⁴	Primary ²	Secondary ²	Method
Oxidant (Ozone)	1 hour	0.10 ppm (200 ug/m ³)	Ultraviolet Photometry	235 ug/m ³ (0.12 ppm)	Ultraviolet Photometry or Chemiluminescent Method	235 ug/m ³ (0.12 ppm)	Same as Primary Standard	Chemiluminescent Method
Carbon Monoxide	12 hour	10 ppm (11 mg/m ³)	Non-Dispersive Infrared Spectroscopy (NDIS)	—	—	—	Same as Primary Standards	Non-Dispersive Infrared Spectroscopy
	8 hour	—		10 mg/m ³ (9.0 ppm)	Non-Dispersive Infrared Spectroscopy (NDIS)	10 mg/m ³ (9 ppm)		
	1 hour	40 ppm (46 mg/m ³)		40 mg/m ³ (35 ppm)	40 mg/m ³ (35 ppm)			
Nitrogen Dioxide	Annual Average	—	Saltzman Method	100 ug/m ³ (0.05 ppm)	Proposed: Modified J-H Saltzman (O ₂ corr.) Chemiluminescent	100 ug/m ³ (0.05 ppm)	Same as Primary Standards	Proposed: Modified J-H Saltzman (O ₂ corr.) Chemiluminescent
	1 hour	0.25 ppm (470 ug/m ³)		—		—		
Sulfur Dioxide	Annual Average	—	Conductimetric Method	80 ug/m ³ (0.03 ppm) ●	Conductimetric Method	80 ug/m ³ (0.03 ppm)	—	Pararosaniline Method
	24 hour	0.05 ppm ⁴ (131 ug/m ³)		365 ug/m ³ (0.14 ppm) ●		365 ug/m ³ (0.14 ppm)	—	
	3 hour	—		1,300 ug/m ³ (0.5 ppm)		—	1300 ug/m ³ (0.5 ppm)	
	1 hour	0.5 ppm (1310 ug/m ³)		—		—	—	
	—	—		—		—	—	
Suspended Particulate Matter	Annual Geometric Mean	60 ug/m ³	High Volume Sampling	75 ug/m ³ ●	High Volume Sampling	75 ug/m ³	60 ug/m ³	High Volume Sampling
	24 hour	100 ug/m ³		150 ug/m ³		260 ug/m ³	150 ug/m ³	
Sulfates	24 hour	25 ug/m ³	AHL Method No. 61	—	—	—	—	—
Lead	30 Day Average	1.5 ug/m ³	AHL Method No. 54	—	—	—	—	—
	Calendar Quarter ●	—	—	1.5 ug/m ³ ●	Atomic Absorption ●	1.5 ug/m ³ ●	1.5 ug/m ³ ●	Atomic Absorption ●
	Hydrogen Sulfide	1 hour	0.03 ppm ₂ (42 ug/m ³)	Cadmium Hydroxide Stractan Method	—	—	—	—
Hydrocarbons (Corrected for Methane)	3 hour (6-9 a.m.)	—	—	160 ug/m ³ (0.24 ppm)	Flame Ionization Detection Using Gas Chromatography	160 ug/m ³ (0.24 ppm)	Same as Primary Standards	Flame Ionization Detection Using Gas Chromatography
Ethylene	8 hour	0.1 ppm	—	—	—	—	—	—
	1 hour	0.5 ppm		—		—	—	
Visibility Reducing Particles	1 observation	In sufficient amount to reduce the prevailing visibility ⁵ to less than 10 miles when the relative humidity is less than 70%		—	—	—	—	—

APPLICABLE ONLY IN THE LAKE TAHOE AIR BASIN

Carbon Monoxide	8 hour	6 ppm (7 mg/m ³)	NDIS	6,670 ug/m ³ (6.0 ppm)	NDIS	-	-	-
	1 hour	-		40 mg/m ³ (35 ppm)				
Visibility Reducing Particles	1 observation	In sufficient amount to reduce the prevailing visibility to less than 30 miles when the relative humidity is less than 70%		-	-	-	-	-
Ozone ●	1 hour ●	-	-	195 ug/m ³ (0.10 ppm) ●	-	-	-	-

NOTES:

¹ California standards are values that are not to be equaled or exceeded. Nevada standards are values that are not to be exceeded where the general public has access.

² National standards, other than those based on annual averages or annual geometric means, are not to be exceeded more than once per year.

³ Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. All measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of Hg (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

⁴ Any equivalent procedure which can be shown to the satisfaction of the Air Resources Board for California or the Environmental Protection Services for Nevada to give equivalent results at or near the level of the air quality standards may be used.

Revisions are indicated by a ●.

⁵ National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

⁶ National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

⁷ Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

⁸ Prevailing visibility is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

⁹ Applies only on days when either the California 1-hour oxidant standard or the California 24-hour suspended particulate standard is violated at the sulfur dioxide monitoring location.

Also the legend for commitments to the control measures must be explained. (CTRPA)

Response: The Clean Air Act Amendments specify that the plan "shall be prepared by an organization of elected officials of local governments . . . and certified by the State . . ." The act goes on to state that in the event that the Governor and consulted local officials cannot arrive at a mutually agreeable designation within six months, the Governor "shall designate an organization of elected officials of local governments . . . or a State Agency to prepare such a plan."

Pursuant to a formal request by the Governing Board of the TRPA (a majority of whose members are elected local government officials), and in light of formal support from Washoe County, the Governor of Nevada formally designated the TRPA as lead agency for nonattainment planning on the Nevada side of the Tahoe Basin. This designation was made on March 1, 1978, with the specific rationale cited being a recognition "that air pollution is not limited by political boundaries," and that "the coordinated, cooperative approach which could be provided by the TRPA would be the most reasonable (alternative)."

The decision regarding lead agency responsibilities for the California side of the basin generated differences of opinion. In addition to the formal request for designation of TRPA, positions of support for either designation of TRPA or the Tahoe Air Basin Control Council were forthcoming from the Control Council, El Dorado County, and the City of South Lake Tahoe; Placer County recommended designation of the Control Council, or the TRPA, and the CTRPA recommended that the ARB assume lead agency responsibilities jointly with the Nevada Division of Environmental Protection.

In response to these differences of opinion, the ARB certified on June 7, 1978 that it would retain the lead agency responsibilities on the California side of the basin. Section 2.2 of the EPA's guidelines concerning Section 174 of the Act authorizes the Governor to designate as the lead planning agency, an organization which in his opinion was most capable of completing the nonattainment plan. The rationale cited for rejection of the different recommendations were "the inability of TRPA to adequately protect air quality in the Tahoe Basin," and the reflection in its actions and budgeting for planning programs that "TRPA has traditionally given the protection of air quality a low priority." The legislative difficulties inherent in the Basin Control Council carrying out lead agency responsibilities were cited as the rationale for rejection of that recommendation.

Both TRPA and ARB committed themselves to a coordinated work program. In May of 1979 the ARB Board adopted the Lake Tahoe Basin NAP (for the California side) as a chapter of the State Implementation Plan. Similarly, Nevada adopted its Lake Tahoe Basin NAP (for the Nevada side) in May of 1979 as part of its State Implementation Plan. There are differences in the control measures which are recommended to achieve attainment of the NAAQS. For example, the California Lake Tahoe Basin NAP/SIP incorporated elements of the CTRPA Regional Plan such as intensive bus service and a basin user fee.

The control measures in the DEIS (pages 134-135) under the TRPA column represents the Nevada program and those under the ARB column represent the program for California, as prepared by the lead agencies. The tables are reproduced here for ease of reference. The measures with an "A" represent measures that have been adopted by the designated lead agencies and for which commitments to

NONATTAINMENT PLAN

CONTROL MEASURE	ADOPTION/COMMITMENT						LEAD AGENCY AND DATE OF IMPLEMENTATION
	Ad Hoc	SLT	E.D.CO.	CTRPA	TRPA	CALTRANS	ARB
TRANSPORTATION MEASURES							
1. Inspection/Maintenance	A	A	A	A	A	S	A
2. Reduce Cold Start Conditions	R	FS	FS	A	FS	-	FS
3. Gaseous Fuel Conversion	R	R	R	A	R	-	R
4. Traffic Flow Improvements	A	A	A	A	A	S	S
5. Reversible Bus Lanes	FS	R	R	A	FS	NS	A
6. Driver Advisories	R	FS	FS	A	A	S	A
7. Loading Regulations	R	FS	FS	A	FS	S	A
8. Staggered Work and/or Operation Hours	FS	R	A	A	A	S	FS
9. Snow Removal Procedure	A	A	A	A	A	S	A
10. Traffic Movement Control	A	A	A	A	A	-	A
11. Idling Restrictions (Drive-Up Windows)	A	FS	FS	A	A	-	A
12. Parking Location Control	FS	A w/FS	A w/FS	A	FS	-	A
13. Parking Supply Management	FS	FS	FS	A	FS	S	FS
14. Parking Operation	FS	FS	A	A	FS	S	A
15. Peripheral Parking Facilities	FS	R	FS	A	FS	-	A
16. Parking Surcharges	FS	R	R	A	FS	S	FS
17. Road Use or Entry Charges (User Fee)	R	R	R	A	R	S	A
18. Priority Treatment for Carpools	FS	FS	FS	A	FS	S	A
19. Increased Vehicle Registration Fees	R	R	R	A	R	-	R
20. Bikeways	A	A	A	A	A	S	A
21. Pedestrian Facility	A	A	A	A	A	S	A
22. Roadwork Restrictions	R	A	A	A	A	NS	A
23. Mail Delivery	A	FS	A	A	A	S	A
24. Rail	FS	FS	FS	A	FS	-	FS
25. Intensive Bus Service	FS	A w/FS	A w/FS	A	FS	S	A
26. Free Mass Transit*	FS	FS	FS	A	FS	S	A
27. Express Bus Lanes	FS	R	R	A	FS	-	A
28. Employee Mass Transit Incentives	FS	A	A	A	A	S	FS

NONATTAINMENT PLAN (Continued)

CONTROL MEASURE		ADOPTION/COMMITMENT							LEAD AGENCY AND DATE OF IMPLEMENTATION
	Ad Hoc	SLT	E.D.CO.	CTRPA	TRPA	CALTRANS	ARB		
LAND USE AND PLANNING MEASURES									
1. Zoning Approvals	A	R	R	A	A	-	A	TRPA, CTRPA; 1979	
2. Purchases of Fragile Lands	R	R	R	A	R	-	FS	Federal government, states; after 1982	
3. Subdivision Prohibition	R	R	R	A	R	-	A	Already adopted by CTRPA	
4. Indirect Source Review	A	R	R	A	A	-	A	Already adopted by CTRPA, being considered by TRPA	
STATIONARY SOURCE MEASURES									
1. Service Stations	A	A	A	A	A	-	A	County air pollution control and health districts; Nevada DEP; 1980*	
2. Bulk Storage Plants (Petroleum)	A	A	A	A	A	-	A	County air pollution control and health districts; 1979-80	
3. Architectural Coating	FS	FS	FS	A	FS	-	FS	County air pollution control and health districts; Nevada DEP*	
4. Degreasing Operations	FS	FS	FS	A	FS	-	FS	County air pollution control and health districts; Nevada DEP; 1980	
5. Asphalt Paving	FS	FS	FS	A	FS	-	FS	State, county and city public works departments	
6. Gaseous Fuel Space Heating	R	R	R	A	R	-	FS	Private sector, local government building departments, ARB, Nevada DEP; after 1982	
7. Solar Space Heating	R	R	R	A	A	-	FS	Local governments; 1980*	
8. Forest Management Burning	R	R	R	A	A	-	R	U.S. Forest Service; 1979	
9. Emission Charges	FS	FS	FS	A	FS	-	R	County air pollution control and county health Districts; 1981	
10. New Source Review Role	A	A	A	A	A	-	A	County air pollution control and health districts, Nevada DEP, already adopted by Lake Tahoe Air Basin Council.	

* Control measures requiring legislation before they may be implemented.

A Control measures which have been adopted.

FS Control measures which are being further studied.

R Control measures which have been rejected.

S Support

NS Nonsupport

Ad Hoc
SLT
E.D.CO.
CTRPA
TRPA
CALTRANS
ARB

Ad Hoc Air Quality Committee
City of South Lake Tahoe
El Dorado County
California Tahoe Regional Planning Agency
Tahoe Regional Planning Agency
California Department of Transportation
California Air Resources Board

Source: TRPA, Lake Tahoe Basin Nonattainment Plan, April 1979.

implement are now being sought. (In some cases, measures are already being implemented.) Some changes may have been effected by the Nevada Environmental Commission, although no written statement has been received by EPA to suggest that the measures are incorrectly designated. Traffic control measure described in the response to comments on transportation (see pages 142-143), which the state feels are positive actions toward mitigating traffic and air quality problems, should be included in the SIP.

ARB has noted that those measures designated "FS" or comparable measures will be necessary to achieve attainment by 1987. Nevada's attitude is that the area is in attainment. Both NAP/SIPs have been forwarded to EPA, which must determine their compliance with the requirements of the Clean Air Act Amendments. EPA's determination of compliance is now underway.

Comment: Why are bicycle facilities important for a wintertime air pollution problem. (NDEP)

Response: There is no reference to bicycle facilities as a control measure for air quality standard attainment in the DEIS. However, bikeways are listed as an adopted control measure in the Lake Tahoe Basin NAP to help minimize the impacts of the growth scenarios. Clearly, the substitution of bicycles for personal automobiles will reduce automotive pollutants. It is not practical to expect bikeways to be used during the winter months at Lake Tahoe; however, the use of bikeways during other months should be helpful.

Comment: The EIS ignores the requirements of the Clean Air Act Section 316. (Brecher)

Response: Section 316 requires EPA to withhold, condition or restrict sewage treatment construction grants in a nonattainment area or an area subject to prevention of significant deterioration (PSD) of air quality, if a state lacks an approved SIP.

Sewage treatment construction grants must be restricted or withheld even if a state has an approved SIP under the following circumstances:

- the sewage treatment works will not comply with new source performance standards or national emissions standards for hazardous air pollutants;
- in a PSD or nonattainment area, the state is not implementing a SIP that accounts for the increased direct and indirect emissions associated with the proposed new treatment capacity;
- the proposed facility will provide new treatment capacity that will result in increased emissions which exceed the level identified in the SIP;
- the proposed facility will otherwise contradict the SIP;
- the new capacity would lead to increased emissions which would interfere with another state's SIP.

The EPA Regional Administrator can either require the governor to revise the SIP to take into consideration emissions associated with the proposed sewage treatment works or require the grant applicant to adopt an adequate emissions mitigation program.

Comment: The mitigation measures in the Lake Tahoe NAP have yet to be approved by EPA, so that a program must be formulated which contains sufficient strategies to offset direct and indirect emissions caused by the project. (ARB, Brecher)

Response: EPA will not approve a grant award without written assurance that STPUD and the other responsible agencies will commit to measures that will facilitate and not hinder efforts to attain the national ambient air quality standards and to offset direct and indirect emissions caused by the project. These commitments are in the form of implementation statements and are presented in Appendix B of this document. It is noted that in May 1979 the California Air Resources Board adopted the Lake Tahoe Nonattainment Plan, as amended by ARB Resolution #79-37. The air pollution control strategies in the plan (which was submitted to EPA as part of the State Implementation Plan) are included as mitigation measures in the EIS.

VISUAL RESOURCES (pages 136-142)

Comment: Description of visual conditions do not relate themselves to future conditions arising from expansion of the treatment plant. Whether the plant is enlarged or not, those conditions will remain. Consequently, it is unclear which mitigation measures are suggested to treat probable future conditions. (page 138-139) (SLT)

Response: The illustrations on pages 138-139 are intended to show existing examples of how development can detract from the physical appearance of an area. It is true that these conditions will remain whether treatment plant is expanded or not. The point that is made in the impact assessment is that these conditions may become worse as further development occurs. On the other hand, development need not detract from the basin's visual quality but can enhance or complement the area's natural beauty. Long standing criteria for good design exist and address the compatibility between the man-made and the natural environment. It is toward this end—that of enhancing the visual experience of the basin—that the mitigation measures are directed. Thus, all of the measures are suggested to "treat" probable future conditions.

Comment: The impact measurements used to assess growth impacts on the basin's visual quality are not well defined. (page 140) (SLT)

Response: A discussion of the impact assessment is provided in the paragraphs immediately following the impact assessment table. The first impact measurement deals with the design character and form of the residential and commercial development along major roadways. (These roadways are shown on pages 113 and 115 of the DEIS Technical Appendices.) Without careful design review, conditions similar to those illustrated on pages 137-139 of the DEIS would be perpetuated.

The second measurement indicates the changes to existing view corridors under the different scenarios. The underlying assumption is that views of the lake and mountains are an enjoyable experience and that disruptions of those views would lessen the visual quality of the basin.

The Western Federal Regional Council Study as noted by the City observes that there are no formalized visual quality objectives; however, that study went on to say that design studies have established visual landscape units for private lands and criteria for defining visual values. These criteria are based on long-standing principles of good design and provide a means of evaluating visual conditions.

View corridors from major roadways likely to be blocked by development are shown on pages 113 and 115 of the DEIS Technical Appendices. Blockage could result from continued highrise development; i.e., buildings which exceed the TRPA height limitations (as set forth in Section 7.13 of the TRPA Land Use Ordinance).

The final measurement assumes that there is some correlation between air quality and the visual beauty of the lake, although as noted in the discussion beneath the impact assessment table in the DEIS, there has been little work to relate violations of the visibility standard with those of the ozone standard.

Comment: The statement is made in the DEIS that increased development would worsen visual problems; yet, this claim is not supported with any factual data. (page 141) (SLT)

Response: In 1971 a visual inventory was conducted of principal travel routes on perimeter highways around the lake. The study developed criteria and a rating system for evaluating roadway and shoreline units. As part of documenting existing conditions, the DEIS updated the evaluation of visual conditions. The same roadway segments were evaluated using the same criterion that were formulated in the 1971 study. The results of the update, presented in the DEIS Technical Appendices (pages 108-115), show 15 of the 43 roadway segments have undergone significant change. The changes in almost all cases result from development that obstructs views, alters the natural landscape, or is out of character with the natural landscape.

Comment: The point is made in the DEIS that because of the permit allocation procedure employed by STPUD it is not possible to predict where development would occur under the low and medium growth scenarios. Yet, the assessment of visual resources is based on where development will occur. How is that possible given the random method of determining who will receive a building permit? (SLT)

Response: Under the low and medium growth scenarios only a portion of the south shore will be developed. As the City points out, the sewer district's method of permit allocation does not allow one to predict where development will occur. It is possible that all building permits issued would be for building sites that would not affect view corridors. In this situation, the impacts identified in the impact assessment table would overstate the adverse environmental effects. By the same token, however, the building permits may be for sites where they will all affect view corridors. The impact assessment reflects this "worst" case situation, realizing that the actual amount of development occurring along major roadways or in view corridors will be somewhere in between these two extremes. The mitigation measures seek to encourage the use of good design objectives to ensure that development in view corridors complements the basin's natural beauty.

Comment: Mitigation measure #3 calls for adoption of a design plan with implementing ordinances and provisions for design review. The comment is made that such implementing ordinances should include adoption of sign or street graphics regulations (page 141) (U.S. Department of the Interior). Also, the U.S. Forest Service does not have jurisdiction over city lands and should not be included as an implementing agency. (SLT)

Response: The description of this mitigation measure calls for a wide range of controls to ensure that development occurs in a manner compatible with the natural landscape. It is entirely appropriate that adoption of sign or street graphics ordinances be included among these controls. It is noted that CTRPA, TRPA, and the City of South Lake Tahoe, all have existing sign ordinances.

The U.S. Forest Service does have review authority within its jurisdiction, and a U.S. Forest Service landscape architect reviews most plans and projects for visual effects. It was never intended that this agency should have authority within the City nor vice versa. The list of responsible agencies merely identified possible agencies with authority to implement the mitigation measures (within their own jurisdiction).

Comment: Further discussion and evaluation is required before designating the Lake Tahoe Basin as a National Scenic Area can be considered as an effective mitigation measures. (page 142) (SLT, LRWQCB, CTRPA, TRPA)

Response: A National Scenic Area, as envisioned for the Lake Tahoe Basin, is a management plan intended to preserve, protect, and enhance, for public use and enjoyment, the scenic, natural, and historic and outdoor recreational values of the basin. (The term National Scenic Area or NSA is used interchangeably with National Recreation Area, or NRA.) Such a plan would most logically be assumed by the U.S. Forest Service because this agency has created new communities under similar circumstances, it has authority to exchange land, and it has large holdings within and outside the Lake Tahoe Basin. This experience, authority, and land base will simplify management problems.

The concept of a National Recreation Area can be flexible, accepting the area as it exists today and providing for the acquisition of undeveloped properties. As described by California Secretary for Resources, Huey Johnson,

"Owners of undeveloped land in the Basin would be able to exchange their property for federal lands outside the Basin or to sell their lands to the Federal Government. Because the Forest Service already has extensive holdings in the area, it would be possible to establish new communities outside the Basin but close enough to residents and visitors to these new communities would be able to enjoy the resources of the Basin on a day-use basis."

The National Recreation Area idea is not new. It has been employed in the Cuyahoga Valley in Ohio, in the Sawtooth NRA in Idaho, in the Golden Gate NRA in California. All contain provisions for the efficient management and preservation of private landholdings, if such landholdings do not conflict with the purposes of the NRA.

Most controversial in any proposed NRA or NSA is the treatment of private lands. A National Scenic Area designation would not:

- result in homeowners being forced to sell their homes to provide for a federal take-over of all private lands;
- prohibit development where it would be consistent with the public interest and where carrying capacities have not been exceeded;
- deny willing sellers and landowners fair value for their land, if acquired; nor
- interfere with continued use of existing residences.

The opportunity to sell or exchange lands offers landowners a plausible means of escaping a future in which downzoning will prevent development and taxes will continue to erode investments.

Many of the acts establishing National Recreation Areas permit owners of non-commercial residential property to retain an interest in the site. (For examples, see the acts establishing the Hells Canyon National Recreation Area, H.R. 30,

Report 94-607; Alpine Lakes National Recreation and Wilderness Area, H.R. 3977, 94 Congress; Indiana Dunes National Lakeshore, 16 USC 460 u-5; the Whiskeytown-Shasta-Trinity NRA, 16 USC 460 q1 (c); the Delaware Gap NRA, 16 USC 0-1 (d); Cape Cod National Seashore, 16 USC 459-b-1 (a); and Golden Gate NRA, 86 Stat. 1299. The extent of the retained interest varies from statute to statute; sometimes it extends until the day the owner's last surviving child reaches the age of thirty (Whiskeytown-Shasta-Trinity NRA), or until a time fixed by the death of the owner or his spouse, whichever occurs later, or a fixed term of not more than 25 years (Delaware Water Gap).

Reservation of a life estate is limited to "improved property" in these acts, and to noncommercial uses. While some acts reserve the option to the landowner of retaining a life estate in the property, other acts leave this option to the acquiring agency. (See, for example, the act establishing Muir Wood National Monument, 86 Stat. 120.)

Several of the acts entitle the landowner to assign his life interest in the property. Since this estate is for an indefinite period, it may be difficult to sell it for a lump sum amount. Therefore, some landowners may choose to reserve an interest for a period of years, say twenty-five years, since this could be more easily valued if the owner chooses to sell it.

Landowners who retain a life interest are obligated to pay use and occupancy taxes in lieu of property taxes, although these taxes may be lowered to reflect the limited use the landowner will be allowed to make of the property if the property is to continue serving the purposes of the recreation area. (TRPA, Tahoe Basin NRAs Feasibility Study, 1976, page 39)

Provisions creating the Santa Monica Mountains National Recreation Area (P.L. 95-625) do not permit the acquisition of fee title to improved properties, unless it is determined "that such lands are being used, or are threatened with uses, which are detrimental to the purposes of the recreation area." Owners of property that are designated for acquisition may retain a right of use and occupancy of the improved property for noncommercial residential or agricultural purposes. Similarly, the regulations governing the Sawtooth National Recreation Area (PL 91-190) provide for acquisition of privately owned land by negotiated purchase; however, such acquisitions shall not exceed 5 percent of the total acreage of all private properties within the National Recreation Area. In Cuyahoga Valley, most residents were permitted to remain in their homes. They were asked to give or sell scenic easements which was a commitment to leave the appearance of the property materially unchanged. Like the Santa Monica Mountains NRA, the Secretary of the Interior could only acquire fee title to privately owned land if it proved detrimental to the purposes of the NRA.

Another concern, and certainly a valid one, posed by jurisdictions encompassed by a NSA is the potential loss in tax revenues when private lands are publicly acquired. Again, because the NRA is a flexible concept, this concern can be handled several ways. The Secretary of the Interior may be authorized to collect user fees. Residents, property owners, and persons employed in the area would be exempt from paying user fees. These fees could then be used to offset property tax revenue losses.

The specifics of a National Scenic Area or a National Recreation Area certainly require further study, however, the flexibility of the concept to accommodate

private and public interests, the already dominant presence of the federal government, the experience of the U.S. Forest Service, and the potential to protect scenic, historic, natural and outdoor recreation values, suggest that further evaluation of this measure is warranted.

LAND USE (pages 143-156)

Comment: The statement is made that most gambling related development occurs on the California side of the basin. What is meant by gambling-related development? (page 143) (SLT)

Response: Gambling-related development refers to the various service oriented businesses that support casino employees and visitors. Thus, such development includes, motels and hotels, restaurants, shops, etc.

Comment: Landownership within the service districts of the two wastewater agencies should be shown. (page 144) (SLT)

Response: None of the references used contained a specific breakdown of landownership by wastewater service area, although such information could probably be easily obtained from the individual districts. Figures 12 and 20 of the DEIS provide a graphic overview of the landownership pattern in the areas.

Comment: Text describing the U.S. Forest Service Land Use Management Plans should be revised to incorporate the following text provided by the U.S. Forest Service. (page 151, para. 1, 2, 3)

- **Response:** The text should be revised to read:

As management policy was revised, refined and developed, the first update of the Multiple Use Plan was documented in 1973. It was distributed for public review as a preliminary general plan and an environmental statement for National Forest lands in the Lake Tahoe Basin. Procedural and other problems caused that plan to not be adopted. Rather, portions of it were used to help formulate a statement of goals and management direction (policy) that was approved in 1978 as the Land Management Plan, Part I.

In August 1979, a draft environmental impact statement was submitted to EPA. Five alternative plans for development and use of the recreation, wilderness and other resources of the National Forest lands were analyzed as methods for achieving the goals of the Part I plan. When one of these alternatives, or a variation of them, is approved, it will become the Part II Land Management Plan. The Forest Service will adopt that plan's proposed level of development as a means of gaining for the public a "fair share" of the basin's capacity to accommodate human activity. Establishing and protecting a "fair share" is considered necessary to assure that other development, which is occurring at a faster pace, will not preclude future development for public outdoor recreation enjoyment.

The landownership adjustment goal of the LTBMU is to expand public landownership to achieve the balance of long-term benefits identified in the plan (U.S. Forest Service, 1978). Approximately 27,000 acres of private land have been inventoried within the basin that meet evaluation criteria for public acquisition. Ultimate public ownership would represent 85% of the total land base. The evaluation criteria considers recreation opportunities, wildlife, cultural resources and environmental effects. Emphasis is placed on acquiring lakefront or shoreline

areas. Consideration is also given to areas where development could have an adverse impact on adjacent National Forest lands.

(Note: In December 1980, the Forest Service's Land Management Plan was conditionally approved. Pursuant to those conditions, the Forest Service will not undertake any action in its roadless areas nor expand its recreational facilities to accommodate additional visitors until the threshold study called for by Bistate Compact is completed.)

Comment: Revise discussion of local land use authority and growth management efforts. (page 152, para. 6, 7) (SLT, LTSLT)

• Response: Text should be revised to read:

The City's General Plan, currently being updated, provides the policy framework for development within the City's jurisdiction. The pattern of community development has been an area of concern and has prompted several additional studies. A 1977 study described various growth management techniques for directing community development. Another document prepared by the 20-20 committee, a citizens group, identified goals for a growth management plan, but the City Council did not adopt the study.

While the City of South Lake Tahoe and counties review all land use applications originating within their jurisdictions, applicants must receive CTRPA review, approval, and permit before the city or counties can issue a building, grading, or other permit allowing construction (CTRPA, Land Use Ordinance, 1976, Section 4.11(b)). In addition, the Lahontan Regional Water Quality Control Board was given permission by El Dorado County to review building permits for compliance with the 208 Plan. The authority of CTRPA to review and approve or disapprove projects, has long been a sensitive and controversial issue among local jurisdictions. The argument put forth by the local governments is that CTRPA has preempted their authority and right to govern themselves. Consequently, the City has not adopted CTRPA ordinances, but TRPA's instead. Similarly, neither Placer nor El Dorado County formally adopted the CTRPA, or TRPA ordinances. In spite of current challenges, CTRPA's policies and ordinances are still in effect and consequently regulate most development in the California portion of the basin. Unless some determination is made that suggests otherwise, the most reasonable assumption is that CTRPA's right to review and approve and disapprove projects will prevail.

The legislative bodies of the City of South Lake Tahoe and El Dorado and Placer Counties in California have entered into a joint power agreement with Carson City, Washoe and Douglas Counties in Nevada for the purpose of cooperative planning and implementation of programs on a basinwide level. Known as the Tahoe Basin Association of Governments, the organization has no power to enforce laws, ordinances, or regulations. Its purposes are to make findings, studies, and recommendations concerning issues of mutual concern and to aid in communication between the various governmental agencies.

Comment: The land capability system was not originally intended to determine urbanization suitability. (page 153) (SLT)

Response: The land capability system described within the DEIS is different than the land capability system used by the U.S. Soil Conservation Service. The one used by the Soil Conservation Service assesses soils for their suitability for agricultural production. The land capability system referred to in the DEIS was formulated by the U.S. Forest Service in conjunction with TRPA and was intended to assess the ability of the land to tolerate human disturbance. (See pages 93-94 for further description.)

Comment: The comment is made that there are no known land use approvals not in conformity with TRPA designations, apparently in reaction to the statement in the DEIS that a number of approved parcels were in conflict with the Plan when it was adopted. (page 153) (SLT)

Response: The statement in the EIS says that a number of lots were subdivided and approved before the development of the land capability system and thus were not consistent with the Plan designations at the time such designations were made. It may nevertheless be true, as claimed by the City, that there have been no known land use approvals inconsistent with the Plan, since it was adopted.

Comment: CTRPA's Land Use Ordinance does not provide for variances allowing greater lot coverages. (page 153) (SLT)

Response: The following text is excerpted from CTRPA's Land Use Ordinance in substantiation of the statement that CTRPA does grant variances.

Section 8.12 Variances

Variances from the terms of this Ordinance shall be granted by the local government and the Agency only if it is found that because of special circumstances applicable to the property, including size, shape, topography, location or surroundings, the strict application of the Ordinance deprives such property of privileges enjoyed by the other property in the vicinity and within the same use district, and same or lower land capability district, and the applicant shows that he cannot make any reasonable use of the property if this Ordinance is applied. Where such conditions are found, the variance permitted shall be the minimum departure from existing regulations necessary to avoid such deprivation of privileges enjoyed by such other property and to facilitate a reasonable use, and which will not violate the requirements set forth in Section 8.11. In no case may a variance be granted that will provide the applicant with any special privileges not enjoyed by other properties in the vicinity. Maximum permissible additions for height or land coverage shall not exceed 10% of the limits set forth, and not more than one of said factors may be added to with respect to any particular project, except that height variances for public projects, ski lift towers, high voltage transmission line poles, and public ball field light poles may be granted to authorize a total height up to 40, 45, 65 and 80 feet respectively. Such variances shall be based on an individual project analysis of the safety standards and visual and environmental impacts of the proposal. Variances shall not be permitted to allow grading or other land disturbance between October 15 and May 1. Variances shall not be permitted for density, nor for the use or activity which is not otherwise expressly authorized by the land use district regulations governing the parcel of property.

Comment: Potential liability against CTRPA is extremely difficult to estimate and should be higher than the \$36 million indicated in the DEIS. (page 153) (CTRPA)

- **Response:** The text should be revised to delete the reference to potential liability:

Conflicts arise when attempts to protect environmental quality in the public interest infringe on private property rights. Land use regulations of TRPA and CTRPA have resulted in such conflicts, and legal action against CTRPA, TRPA, and local jurisdictions has been sought by individuals and corporations and as class actions for alleged inverse condemnation and denial of civil rights. More recently, the TRPA Water Quality Management Plan (TRPA, 1977b), which recommended removal of development rights for subdivided lots within stream environment zones, has been controversial. The land use implications of these conflicts are described in "Water Resources and Water Quality."

Comment: Scenario 5 purports to represent buildout, yet it does not call for the development of all of the estimated 11,000 remaining subdivided lots, nor those lots currently zoned but unsubdivided. (page 154) (SLT) The possibility of additional pressure for urban development on lands zoned General Forest should be recognized. (California Department of Forestry)

Response: An estimate of the number of vacant subdivided residential lots within the STPUD service area was obtained from CTRPA, which was updating its land use inventory in 1978. Indicated below are summary figures, compiled from the CTRPA inventory which tabulated information by minor traffic zones. The figures represent the number of vacant, residentially-zoned lots.

	<u>Vacant Lots</u>	<u>Vacant lots in STPUD Service Area</u>
City of South Lake Tahoe	3,607	3,607
Unincorporated portions of El Dorado County	<u>7,188</u>	<u>6,292</u>
Total	10,795	9,899
Residential lots currently on land zoned General Forest and Tourist Commercial	<u>101</u>	<u>101</u>
	10,896	10,000

Current CTRPA policies do not permit any subdivision for residential developments until 85 percent of the vacant parcels of record as of August 29, 1975, have been utilized and findings can be made that further approvals would be consistent with the environmental constraints of the region. It is uncertain whether CTRPA would approve new subdivisions. Recent studies such as the Western Federal Regional Council's Lake Tahoe Environmental Assessment conclude "that growth has now caused some environmental impacts that are in violation of Federal standards and caused a level of deterioration that violates many individuals' preferences as well

as social norms for an area such as Tahoe" (page 212). Furthermore, the 208 Plan restricts developments in order to protect environmentally sensitive areas, and the Bistate Compact calls for a carrying capacity study which may suggest a lower level of development. Consequently, the DEIS assumes that lots currently zoned but unsubdivided would not be built out. It is recognized, that there is a possibility lots may be developed, that lands may be rezoned, and that the impacts of buildout may be understated, but the most reasonable assumptions that can be made at this time do not suggest development of unsubdivided lots nor conversion of nonresidential land use designations to residential.

Comment: A larger or smaller percentage of land available, or land developed, does not directly relate to flexibility and planning options nor in the avoidance of conflict between land use and environmental quality. (page 155) (SLT)

Response: The intent of the measure is to assess how development pressures, as defined by the five scenarios, will consume the available land supply. The available land supply is naturally greater under scenarios where the level of development is less. It is suggested that a benefit of low levels of development is that it allows local and regional planning agencies greater flexibility in planning where and how development occurs. The City correctly notes that this benefit is not necessarily a direct result of lower development levels, because other considerations such as market forces, location of existing land uses, and availability of resources come into play. The DEIS should be interpreted as saying that the opportunities to reduce conflicts between land use, environmental quality, and economic conditions are enhanced when development levels are lower.

Comment: The discussion of land use impacts should be revised to reflect:

- The difference in development patterns, i.e., density versus compactness, resulting from different levels of development (CTRPA);
- A strengthening of the language identifying the impacts of further development (Caltrans); and
- A clarification of what seems to be proposals to rezone land, and if this is the case, the impacts on traffic and water supply must be addressed (LTSLT, SLT).

Response: The text should be revised to read:

● **Description:**

For the STPUD area, Scenarios 1 and 4 result in the least amount of change in land use, and to the extent that the additional development can be encouraged to occur on lands suitable for development (i.e., on lands greater than land capability class 3 where views corridors will not be obstructed), conflicts between land use, environmental quality, and economic conditions can be reduced. In contrast, Scenarios 2 and 5 consume all zoned and subdivided lots, and reduce the opportunities to mitigate adverse land development impacts. Under these scenarios, techniques to encourage clustered housing and transfer of density rights become even more important to preserving the basin's natural amenities.

Remaining land area available for general commercial use in STPUD amounts to approximately 400 acres. An additional 200 acres would be used for tourist commercial at buildout. Most commercial land area is concentrated along Highway 50 and south of the Y, and further commercial development would occur as infilling of these areas.

For DCSID, Scenarios 1 and 2 result in the least amount of change in land use and the greatest potential to minimize various environmental problems. Scenarios 4 and 5 which result in full development of the available land in DCSID, and minimize the flexibility to reduce land development impacts. Of course, site planning requirements oriented to clustering development on suitable lands could ameliorate some of the impacts for all the scenarios. However, under the high growth scenarios it is unlikely all the development potential could be accommodated on suitable lands.

Because of the economic demand for commercial uses, an impact of the high growth scenarios for DCSID may be to increase the amount of tourist commercial land (for hotel/motel development) through rezoning of current residential and general commercial zoned lands. Other pressures may arise to revise the coverage and/or height requirements to increase the available land supply. Most commercially-zoned land is concentrated along Highway 50 in the Stateline area and on the Kingsbury Grade.

A more detailed examination of land supply and demand is contained in Appendix A of the Technical Appendices to the DEIS.

The use of development control techniques and growth management techniques will certainly affect the development pattern under each of the scenarios. Allowing growth to occur in the absence of these techniques may result in a low-density scattered development pattern. Development in the DCSID will be of a higher density (more units/acre) than in STPUD because of current zoning. However, the development pattern (e.g., dispersed and scattered versus clustered and compact) will vary depending on the application of available techniques to influence development location. For example, efforts to discourage development in environmentally sensitive area could require development be clustered or that the development rights be transferred to another site with higher capability lands.

Critical Implications

Land uses in the south shore have already caused significant environmental and economic problems. Evidence of this is seen throughout the DEIS, particularly under the water quality impacts of urbanization. Conflicts between land use and visual quality, air quality, and traffic have also been documented, as have economic difficulties in providing needed services for existing land uses. Further development will continue to exacerbate existing problems, and the cumulative effects of such development will detract from the natural and scenic quality of the basin, as well as their enjoyment by visitors and residents.

HOUSING (pages 156-168)

Comment: Douglas County's share of residential construction will lessen as STPUD expands. The reason Douglas County has received a larger share is that sewer constraints exist in STPUD. (page 156) (CTRPA)

Response: The EIS stated that "Douglas County's share of south shore residential construction is growing." As the comment correctly points out, this has been true because "sewer constraints exist in STPUD." Douglas County's share of construction could decline once sewer constraints in STPUD are removed, though other policies and market forces could affect how much construction occurs at that time.

Comment: Data is needed to support the claim that housing prices have increased. (page 158) (SLT)

Response: Data from the South Lake Tahoe Board of Realtors indicates that the average price of a home sold in South Lake Tahoe increased from \$40,319 in 1975 to \$87,018 in 1979 (City of South Lake Tahoe, Housing Data Report (Draft), June 1980, page 49). This represents an average percentage increase of 21.2 percent per year.

Comment: There is now more current information on the quality of the housing stock than that on which the DEIS was based. (page 158) (SLT)

Response: The section on housing quality was based on the most current data available at the time the DEIS was prepared. Since then, the City of South Lake Tahoe conducted a windshield survey of a random sample of its housing stock. That survey, conducted in 1979, showed 9.8 percent of the stock to be in need of maintenance, 6.0 percent in need of moderate rehabilitation and 6.8 percent in need of major rehabilitation (City of South Lake Tahoe, Housing Data Report (Draft), June 1980, page 46).

Comment: The statement in the DEIS about the increased number of retired and second home buyers conflicts with information in the Housing Element of the City of South Lake Tahoe. (Page 159) (SLT)

Response: The comment suggests that information in the South Lake Tahoe Housing Element contradicts the DEIS's statement that the number of retired and second-home buyers seeking houses in the south shore area has increased. This appears to be a reference to a quote from the 1976 Dillingham study. Table 4 of that study shows that vacant seasonal and unavailable housing units dropped from 44.0 percent of all south shore units in El Dorado County in 1970 to 38.2 percent in 1974.

The Dillingham study concludes that there is "a trend toward a greater percentage of units being made available for long-term occupancies, particularly in California." This conclusion, however, does not contradict the statement in the DEIS. First, retirees are long-term occupants. Thus, an increase in the availability of units for long-term occupants is consistent with an increase in the number of retired buyers.

Second, retirees and second-home buyers could increase in number (the unit of measurement used in the DEIS) but decline in percentage terms (the unit of measurement used in the Dillingham study) if the total of units increases. In the City of South Lake Tahoe alone, the housing stock increased by 1,433 between 1975 and 1979 (City of South Lake Tahoe, Housing Data Report (Draft), June 1980, page 31).

Third, the Dillingham study focuses only on the development in the early 1970's. The rapid increase in housing prices since 1974 has made it less likely that people employed in the Lake Tahoe Basin economy could afford south shore homes. In 1975, the buyer of an average home in South Lake Tahoe needed an income of \$15,000. By 1979, an income of \$41,500 was needed (Housing Data Report, page 51). Because most service jobs in the local economy would not enable households to earn that high an income, it can be assumed that retired and second-home buyer will increasingly represent both a larger number and larger percentage of all buyers. This assumption is verified through interviews with realtors and other observers of the real estate market, even though comprehensive statistics on the matter do not exist.

Comment: Property owners will not incur real losses of income because of lower growth rates. They will, however, experience reductions of expected profits. (page 164) (CTRPA)

Response: The DEIS did not state that lot owners would lose income if they were not permitted to build. It stated, instead, that they would lose their "potential to earn income." This is not a reduction in existing income. Prohibiting development would, however, result in a real financial loss of a different sort. It would be a loss of asset value, rather than income. The market value of lots declared unbuildable would drop and this drop would represent a real financial loss to the owners.

This comment raises the difficult question of how to define "loss" to owners of unbuildable lots. A thorough discussion of this issue is presented on pages 94-99 of the Economic and Fiscal Effects of SWRCB's Water Quality Plan for the Lake Tahoe Basin (Recht Hausrath & Associates, September 1980).

Comment: Moderately priced housing should be encouraged inside the basin as well as outside. (page 164) (SLT)

Response: The development of affordable housing should, of course, be encouraged inside the basin as well. However, because of the greater difficulties of encouraging affordable housing inside the basin (due to higher market value), the DEIS focused on the more feasible mitigation measure of encouraging affordable housing outside of the basin.

Comment: Because Nevada law prohibits casino expansion, it is not a viable mitigation to require casinos to provide housing. (page 167) (SLT)

Response: The revised Bistate Compact does provide for limited expansion. The mitigation measure recommends that incentives be formulated for casinos to provide housing with gaming expansion.

Comment: The DEIS suggested improvements in neighborhood facilities to encourage private spending to upgrade the housing stock. Cost estimates for the improvement of those facilities should be provided. (page 166) (SLT)

Response: The specific improvements to neighborhood facilities that would be needed and be cost-effective would have to be determined on a neighborhood-by-neighborhood basis, because each neighborhood would have different requirements and the appropriate improvement program would vary. As a result, a general cost estimate is not appropriate.

Comment: It should be noted that the current sewer permit allocation system adversely affects the housing supply by encouraging single-family residences in areas classified at higher densities. (TRPA)

Response: In California, CTRPA's land use policies do not allow multifamily units until 85% of the vacant parcels of record as of August 29, 1975 have been utilized for the construction of at least one dwelling unit or allowable commercial structure. Thus, the development of single-family residences in lands classified higher densities stems from a land use policy decision and not from the sewer permit allocation system. The CTRPA land use ordinance does, however, encourage clustering development and transfers of density rights which would allow for more compact development at higher net effective densities.

TRANSPORTATION (pages 168-176)

Comments: Discussion of west shore congestion should be revised to be more specific about location of both summer and winter congestion. (page 168) (Caltrans)

Responses: Although site inspections were made as part of the DEIS study, the specific traffic information was provided by others. Most of the information for the west shore was provided by Caltrans and CTRPA. Following are quotations from page 13 of the CTRPA report, Regional Transportation Plan, dated August 1979:

"Existing Highway 50 in South Lake Tahoe has reached practical capacity along many sections, particularly near the Stateline area."

"Congestion also exists along the west and north shores of Lake Tahoe during the summer and winter peak periods. Heavy commercial activity and roadside parking contribute to restrict traffic flow."

"Heavy snowfalls, icy conditions, snow storage and removal and narrow two-lane roadways, with inadequate shoulders, increase congestion."

A map on page 11 of the CTRPA report (reproduced here as Figure 6) shows, for various locations along the west shore, the average daily traffic volumes (in thousands of vehicles per day) for the summer peak month, and the practical capacity of the road (also in the thousands of vehicles per day). A comparison of the volumes to the capacities indicates that congestion occurs in the peak summer month on State Routes 89 and 28 in and near Tahoe City.

The CTRPA report also indicates (on page 12) that existing traffic problems on the west shore are caused at least partly by the relatively large volume of short trips that are made along the west and north shores. The number of short trips is shown to be particularly high on Routes 89 and 28 from Homewood through Tahoe City to Incline Village.

It was observed during the EIS study that summer congestion also occurred in the Emerald Bay area because of steep grades, inadequate sight distances for passing on curves, inadequate shoulders in some locations, and slowing down and parking by drivers who were responding to the spectacular views.

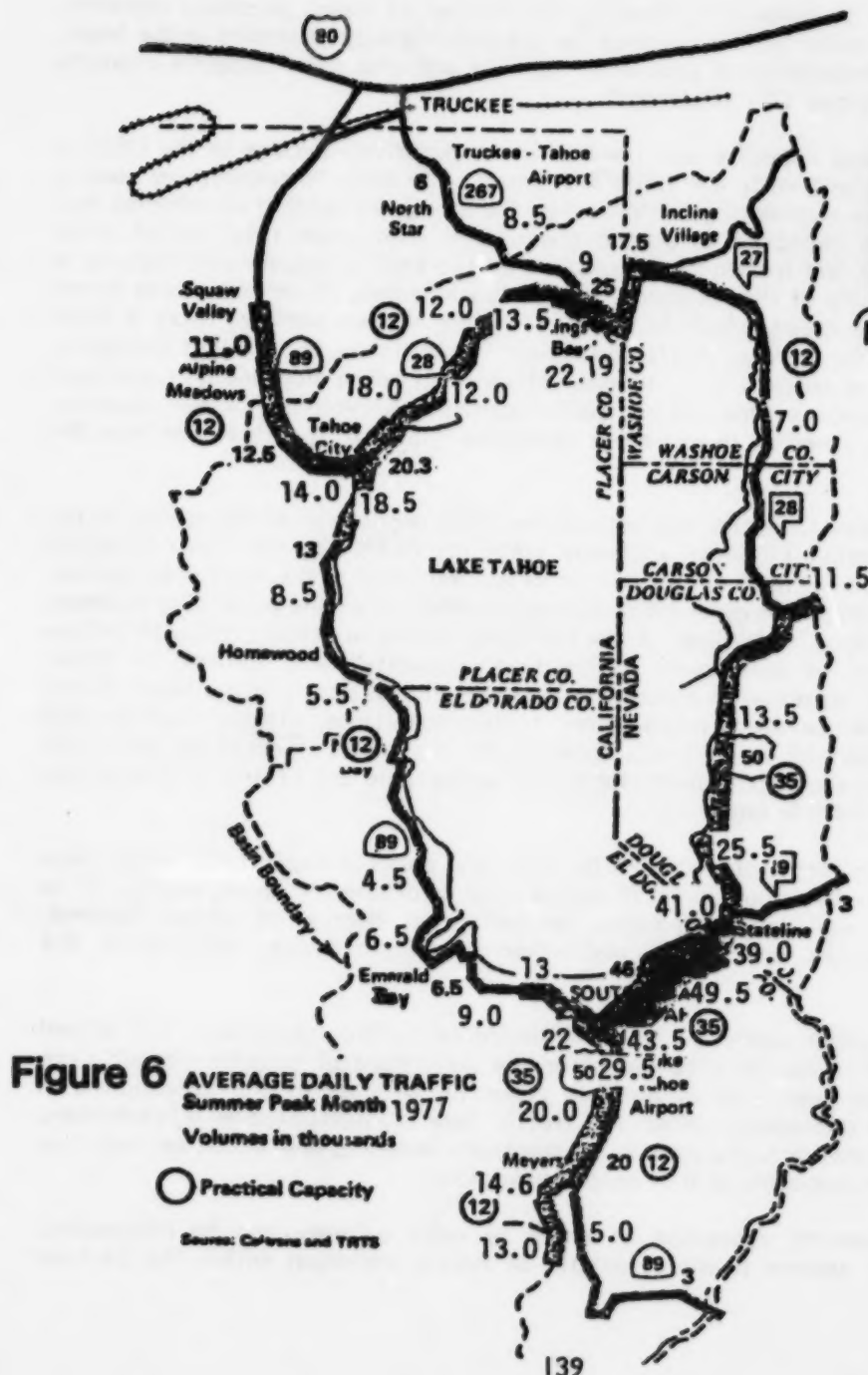
Congestion occurs on the west shore during winter conditions when ice and snow require closing of Route 89 in the Emerald Bay area, and because of activities in the ski areas. There are ski areas and State parks and recreation areas along the west shore from Meeks Bay north to the Nevada State line.

Comments: Parking spaces have also increased in commercial areas—not just in casino areas. (page 170) (LTSLT)

Response: The statement on page 170 of the DEIS says, in effect, that about one-fourth of all public and commercial parking spaces in the Tahoe Basin in 1977 were there specifically to serve the south shore Stateline casinos, and that the number of casino parking spaces has increased since then, raising the percentage of parking

Corridor Volumes

All of these trips combine to produce the problems discussed earlier. The average daily traffic on selected corridor facilities versus practical capacity indicates where the existing congestion is located and its severity.



for casino purposes even higher. The number of parking spaces for south shore casinos was increased substantially by the construction of Park Tahoe. Other additions to casino parking have also been planned. There may have been an increase in the number of public and commercial parking spaces for noncasino purposes since 1977, but there were no data available on such a parking increase, and it is unlikely that any such increase was comparable in magnitude to the increase in south shore casino parking.

Comment: Table 34 (page 171), showing the number of lanes, practical capacity, and 1977 average daily traffic volumes for various highway segments in the basin, should include a description of practical capacity and also show absolute capacity of highway lanes. (page 171) (Caltrans)

Response: Practical capacity was used as a comparative measure in the DEIS in order to be consistent with the CTRPA reports. The term "capacity," as used in traffic and highway engineering, is defined as the maximum number of vehicles that can reasonably be expected to pass a given point in a given time period under prevailing roadway and traffic conditions. When the traffic volume on a highway is equal to the capacity of that highway, traffic is congested; all vehicles must travel at nearly the same speed, which is the speed of the slowest vehicle; there is little or no opportunity for passing; traffic conditions are unstable, and a slight disruption such as swerving or quick braking by one vehicle, can cause stop and go conditions or complete stoppage of the entire traffic stream. At volumes below capacity, drivers have some freedom to maneuver and some choice of speeds faster than the slowest vehicle.

In the 1950 Highway Capacity Manual and the 1954 geometric design policy of the American Association of State Highway Officials (AASHO), the term "possible capacity" was used to mean "capacity" as described above: the maximum number of vehicles that can pass a given point during one hour under the prevailing roadway and traffic conditions, regardless of the resulting delays to drivers and restrictions on their freedom to maneuver. "Practical capacity" was defined in those documents as the maximum number of vehicles that can pass a given point during one hour under the prevailing roadway and traffic conditions, without unreasonable delay or restriction of the driver's freedom to maneuver. Therefore, practical capacity represents a more comfortable and acceptable set of traffic conditions than capacity or possible capacity.

When expressed in terms of daily traffic volumes, possible capacity is larger than practical capacity by about 30 to 70 percent for two-lane highways, and by 60 to 150 percent on multilane highways, depending on degree of access control, percentage of trucks and grades and other geometric design features of the highway.

Capacity (or possible capacity) is not a desirable traffic condition. The actual traffic volume that can be attained after the conditions of possible capacity are reached is usually less than at possible capacity, because of the breakdowns in traffic flow that can occur. When the traffic flow is interrupted by a breakdown, the volume that can actually pass is substantially reduced, and it can be even less than the practical capacity of that roadway section.

Furthermore, capacity expressed in terms of daily volumes can be misleading, because it must assume a characteristic of hourly variation within the 24-hour

volume, and the hourly variation is likely to change when capacity conditions are reached—usually the peak period is extended.

The term "absolute capacity" is not generally used in traffic and highway engineering, but the term implies the same meaning as capacity or possible capacity, at least when expressed as an hourly volume. When applied to daily volumes, the term "absolute capacity" could be confusing and misleading because it requires an assumption as to the "absolute" number of hours of the day over which the peak traffic conditions could occur. The "absolute" number of peak hours in a day could be interpreted as 24, but it is unlikely that such a condition could occur with any regularity. For these reasons, it seems that a listing of absolute capacities would require questionable assumptions and would not be useful.

It should be noted here that the term "practical capacity," although still in use, was replaced in the 1965 Highway Capacity Manual with definitions of "service volumes" at various levels of service. Practical capacity assumed certain service conditions, appropriately equivalent to level of service C or D under the newer definitions. The 1965 AASHO geometric design policy also dropped the term "practical capacity" in compliance with the newer Highway Capacity Manual, but maintained the term "design capacity," which, for design purposes, has the same meaning as practical capacity.

A more detailed description of capacity conditions compared to volumes would require more detailed hourly traffic counts at the critical points on the highways around the lake. Except for the roads in the South Lake Tahoe area, more detailed traffic data for the California side were not available. Although some traffic data are listed in the Caltrans annual reports, most of the data are not from actual counts but are factored from previous years.

Because the EIS is concerned most with the vicinity of the south shore, because traffic conditions are most critical there, and because the most detailed traffic data were available for that area, the detailed analysis of traffic variations and road capacities for the EIS was concentrated on that area. A thorough presentation and discussion of capacity and traffic characteristics for the south shore is included in the Technical Appendices of the DEIS on pages 129 through 167.

Comment: Insert revised discussion of public transit (as provided in comments). (page 170) (SLT)

Response: The City's description of available bus services is reproduced here, as a helpful addition to the discussion of public transit.

There are several bus systems operating within the basin. Greyhound, Grayline and LTR carry passengers from points outside the basin and are regulated by state agency. There are also 11 firms operating 22 units for public conveyance at no cost to the rider under authority provided by the City of South Lake Tahoe. Then there are two public agency systems. TART is operated by Placer County and by agreement with Washoe County, Nevada now extends from Tahoma to Incline Village. However, this system is totally outside of the service area of either STPUD or DCSID. The City of South Lake Tahoe runs a full time 24-hour day, 365 days a year system with a main line connecting the Stateline and the "Y" along with feeder loops. In addition, this system is

presently augmented by a 3-loop ski-bus service with cooperation from the USFS is planned for May 1980. The City of South Lake Tahoe operates 11 vehicles in its service and is in the process of acquiring new vehicles to replace present rolling stock. Over 600,000 passengers were transported during fiscal 1978-79. More current ridership data is available if requested. Although cash fares have been set at 75¢ per trip, this fare applies only to adult passengers not buying tokens. Tokens, student and senior fares are lower than the stated 75¢ amount. Additionally, the city is exploring several marketing proposals to enhance ridership that will include monthly passes, tour package courtesy rides, etc.

Comment: No mention of present positive action to mitigate traffic impacts such as pedestrian underpasses, shuttle buses, and the corridor transportation study. (pages 168-176) (DCPD, Kjer)

Response: Since the DEIS was prepared, a number of actions have been undertaken, which the Nevada Division of Environmental Protection, the Douglas County Planning Department, and the City of South Lake Tahoe believe are positive steps toward mitigation traffic and air quality impacts. As a result of these steps, Nevada believes it is attaining the NAAQS. The key elements contributing to traffic flow and air quality improvements are described below.

Loop Road. The construction of the Loop Road has altered traffic flow around the casinos such that egress is facilitated and one signal light on U.S. Highway 50 has been removed. The stop-and-go conditions along the highway have been alleviated, thus permitting smoother traffic flow and reducing air pollutant emissions. (Serdoz, NDEP, personal communication)

Underground Pedestrian Underpass. The grade separated pedestrian walkway between Harrah's and Harvey's casinos has minimized the number of pedestrian crossings along U.S. Highway 50. These crossings created stop-and-go conditions which prevented smoother traffic flow and contributed to air pollutant emissions. (Serdoz, NDEP, personal communication)

JHK Transportation Study. A comprehensive analysis of the U.S. Highway 50 corridor between the Round Hill area in Douglas County and the Lake Tahoe Airport was performed by JHK and Associates for El Dorado and Douglas Counties, City of South Lake Tahoe, Caltrans, and the Nevada Department of Transportation. The study resulted in recommendations for both long- and short-term solutions to congestion. The short-term improvements include:

- development of an integrated traffic control system;
- development of preferential vehicle lanes along a limited section of the corridor;
- developing a transit system involving a variety of modes including public transit, taxis, private limousines, and paratransit;
- major redesign of traffic facilities and operations in the area between Pioneer Trail and the Loop Road to facilitate circulation; and

- completion of the eastern portion of the Loop Road.

The long-term improvements include:

- a high capacity transit link from the casino area to the "Y", involving a fixed guideway system;
- development of three major transit centers that serve as focal points of the system; and
- the high capacity transit link would be supported by a system of transit feeder services.

The plan was endorsed by both El Dorado and Douglas counties. As noted in the air quality section, mitigation measures believed by Douglas County to be effective should be included in the State Implementation Plan for air quality.

Comment: Anticipated impacts on traffic generation and traffic resulting from internal expansion of casinos must be included. (page 172) (Caltrans)

Response: According to figures in the TRPA report of January 1977 on impacts of potential hotel/casino expansion, the trip generation factors for granting operation within the south shore "casino core," based on 1974 data, averages 218 vehicle trips during the summer season, and is 247 vehicle trips per day for the peak month of August.

The TRPA report also presents a trip generation rate of 313 vehicle trips per day per 1,000 square feet of gaming area for a "typical" new hotel casino further away from the State line. A CTRPA report of November 1978 on traffic conditions that would result from proposed new parking structures in the casino core, presented a trip generation rate of 254 vehicle trips per day per 1,000 square feet of gaming area resulting from a traffic analysis of Harrah's garage by the consulting firm of Creegan & D'Angelo. The TRPA report pointed out that, at that time, there were proposals to construct the Park Tahoe, Tahoe Palace and Oliver hotels and to expand Harvey's, and estimated that these proposed gaming facilities would generate an additional 44,345 vehicle trips daily, which, when added to the 34,440 daily vehicle trips generated by existing casinos, would increase the existing south shore casino-generated traffic by 128 percent.

The revised Bistate Compact limits the expansion of gaming and related activities. Any expansion beyond 15 percent of the base area, as defined in the Compact, constitutes a project and would require a detailed environmental impact statement. It can be assumed that additional gaming areas could accommodate visitors at about the same rate per unit of floor area as the existing gaming facilities, and would bring about a comparable generation of additional vehicle trips.

Comment: Use of average weekday traffic volume is misleading. Summer day figures would make a better comparison. The figure of 44,000 ADT at Stateline is incorrect. Figures for traffic on Van Sickle and Lower Loop Road should be included. (page 172) (Caltrans)

Response: The figures shown on page 172 of the DEIS are summer day figures, as is noted in the paragraph beneath the impact table. The figure of 44,000 at Stateline is correct, according to the available data. It represents the summer daily volume on U.S. 50 and the Loop Road combined, as stated in the DEIS. The combined total was used at this location which includes all roads crossing the Stateline (including Van Sickle and Lower Loop Road), rather than the volume on U.S. 50 alone, in order to provide a simple basis of comparison for future conditions with or without the proposed and controversial project to complete the Loop Road.

Comment: Traffic volumes at Stateline and U.S. 50 appear high. Data suggest only 31,000. (page 172) (DCPD)

Response: According to data from the Caltrans annual report, the 1977 AADT at Stateline on U.S. 50 was 34,500 and the average daily volume in the peak summer month was 39,000. These figures are presented in the Technical Appendices of the DEIS on page 131. The figure of 44,000 on page 172 of the DEIS is the 1978 summer daily volume on U.S. 50 and the Loop Road combined, as explained in the response to the comment above. The Nevada Department of Transportation has data on traffic volumes in the vicinity but not at Stateline.

Comment: Explain why observations relating traffic volumes and roadway capacity are contrary to studies performed by City in conjunction with Caltrans and others. Congestion would not be a problem, if streets and highways were upgraded. (page 173) (SLT, NEAT)

Response: The primary purpose of the corridor study was to recommend a solution to the problem of traffic congestion along U.S. 50 in South Lake Tahoe. The study recommended some highway widening and new construction, the installation of a coordinated traffic signal system controlled by a central computer, and preferential highway lanes for public and private shared-ride vehicles such as taxis, buses, limousines, etc. The report indicated that a long-range, future transit service which would include a fixed guideway system could reduce vehicle trips on U.S. 50 at some time in the long-range future by about 14 percent. The report did not indicate that highway traffic would not increase. So the corridor study proposed to improve traffic conditions by increasing traffic capacity, which would also result in increased traffic volumes.

This is not contrary to the discussion on increased traffic capacity in the DEIS. The point of that discussion (page 173 of the DEIS) is that increasing the capacity of the highway system to relieve congestion will cause the traffic volumes to increase. It is believed that the corridor study consultants and Caltrans would agree with this statement.

Comment: Proposals to expand public transit while also restricting auto use in order to reduce traffic volume and maintain the reduction need to be studied further before they can be supported. (page 173) (DCPD)

Response: It is agreed that further study of the idea would be helpful, however, some additional discussion of the idea is presented in the Technical Appendices of the DEIS on pages 188 to 199, and the discussion there may help to clarify some aspects of the proposal.

Comment: Mitigation Measure #1 (add more buses and establish basinwide transit agency) should be revised to reflect service area confined to STPUD and DCSID, existing efforts by the two districts, better cost and timing information. (pages 174-175) (SLT)

Response: Mitigation Measure #1 on page 174 of the DEIS was described on the basis of information available at the time of writing. The description of the measure can now be updated to incorporate additional information that is available (see pages 142-143 of the FEIS); however, the revised description is not likely to change the effectiveness of the measure. Traffic and other transportation measures for the STPUD and DCSID areas cannot be covered reasonably without considering travel that goes beyond the boundaries of those areas, and without including other agencies that have some responsibility for, or authority and jurisdiction over, transportation services and facilities within those areas.

Comment: Cost estimates for Mitigation Measure #2 (establish light rail service, a supporting bus feeder system, and a basinwide transit agency) should be revised to reflect new estimates. (page 175) (SLT)

Response: Capital costs to implement the CTRPA 1980 transportation element of the Regional Plan which includes portions of Mitigation Measures #2 were obtained from CTRPA (Balog, CTRPA, personal communication). Over the next two years, roughly \$9.5 million are needed to carry out the Plan. Of this amount approximately \$2 million is required to expand the bus system basinwide. Over the next five years, approximately \$53 million would be needed to carry out the Plan. Operational and maintenance costs would substantially increase the project cost, possibly doubling the estimated costs. These figures should be treated as rough estimates only.

Other cost figures relating specifically to the light rail guideway and bus systems can be found in the study on the Highway 50 Transportation Corridor, sponsored by the City of South Lake Tahoe, El Dorado and Douglas Counties, Caltrans, and the Nevada Department of Transportation.

Comment: Mitigation Measure #4 (establish light rail service, local bus services, basinwide management of road system, and basin user fee) requires legislative enactment. (page 176) (SLT)

Response: Portions of the Mitigation Measure #4 do require legislative enactment as indicated by the City. Efforts to implement a basin user fee will require legislation, as will basinwide management of the road system. In part, because of this requirement, the list of responsible implementing agencies includes federal, state, and local government.

RECREATION (pages 176-181)

Comment: Table 35 identifies recreation capacity and shows 203,700 acres. How does this relate to the wastewater agencies' service area? (page 177) (SLT)

Response: Table 35 identifies recreation capacity as the number of persons that can be accommodated at one time in the National Forests within the Lake Tahoe Basin and compares this against the number of visitor days in 1975. The table does not include acreage figures. The figures account for all national forests lands in the basin. Table D-2 of the DEIS Technical Appendices identifies the individual facilities within each national forest. The facilities of the Eldorado National Forest are proximate to STPUD's service area; the facilities of the Toiyabe National Forest relate to the DCSID service area.

Comment: The discussion of existing recreational facilities should include a more complete inventory of City facilities. (page 177) (SLT)

Response: The following information provided by the City of South Lake Tahoe provides a more complete idea of the wide range of recreational facilities available in the City and elaborates on material in the DEIS.

El Dorado beach is part of a larger ownership owned by El Dorado County and leased to the city. The city operates a boat ramp on the shoreline of Lake Tahoe; maintains an Art Center, a Developmentally Disabled Center, Women's Center, Scouting Hall, Recreation complex and a variety of outdoor recreation facilities including an all-weather swim pool, volleyball, handicapped outdoor playground, softball and football fields, tennis courts and has plans for an ice rink. The city has also installed a major portion of a bike trail master plan which is under the recreational program of the city. Additional facilities are provided by the Lake Tahoe Unified School District. The unincorporated area within the STPUD service area also benefits from a recreational resource provided by the Tahoe Paradise Resort Improvement District. The city has furthermore established a fund for further open space and parklands acquisition. An Open Space and Parklands Commission has been appointed to establish priorities for the acquisition program.

Comment: The City of South Lake Tahoe disagrees with the high visitor levels reported in the EIS. The ski season does not experience a particularly high visitor level. (page 179) (SLT)

Response: Unfortunately the text in this area of the DEIS is rather confusing. Summer visitation rates are, as the city notes, much higher than those experienced during the winter ski season.

- The last sentence in paragraph 2 should be revised to clarify differences in visitor levels:

Gaming remains the most important private attraction and is a year-round operation. However, visitor levels change with the seasons: visitation is highest during the summer, next highest during the December-March ski season, and lowest in the spring and fall.

Comment: An attempt is made to measure forecasted impacts upon the lake shoreline, noise, traffic, air pollution, etc., resulting from the upgrading of recreational experience. This section needs expansion and revision to clarify the type of recreational resource: is it federal, state, county or city? Also, the type and location of such recreational development needs to be defined and measured against the perceived impacts indicated in the impact table. (page 181) (SLT)

Response: The table does not attempt to forecast impacts resulting from an upgrading of the recreational experience. Instead the impact assessment attempted to indicate how the natural beauty and the outdoor recreational experience would be diminished if elements that contribute to that beauty and recreational experience were degraded. All outdoor recreational facilities (federal, state, county, and city), natural open spaces, and view corridors are integral parts of the "Tahoe experience."

Thus, it was assumed that the quality of the recreational experience would be less enjoyable if access to the lake shoreline were reduced; if noise, traffic, and air pollution levels were increased; if the natural setting were disrupted; if the availability of outdoor recreational facilities were diminished; and if the water quality were degraded.

Comment: Additional data is needed to support the claim that public access to the lake is limited. Within the city beach access is extremely good. (page 181) (SLT)

Response: While public access to lake shoreline may be good within the city limits, it should be remembered that the study area includes areas outside the City. Table 30 (page 144) of the DEIS shows landownership and shoreline miles around the lake. The table indicates that while the private lands accounts only 31 percent of the land area, 66 percent of the land is along the shoreline. While there is no guarantee that public ownership would protect views of the lake any better than private ownership, the public bodies are not developing lands for residential and commercial uses. It is this type of development when done poorly which has minimized public access and detracted from the basin's visual qualities. Access to the lake, as just noted, also includes views of the lake, and information has revealed that roadway units whose scenic quality was reduced were all on roads circling the lake (see Technical Appendices of the DEIS, pages 108-116).

Comment: Mitigation measures in the FEIS should include such local jurisdictions as implementing agencies (SLT) and be presented in a more detailed form based upon coordination with other Tahoe Basin Plans in progress. (pages 182) (U.S. Department of the Interior)

Response: The measures to mitigate impacts on the recreational experience in the basin and the commitment of various agencies to those measures are presented in Appendix B of the FEIS.

PUBLIC SERVICES/FISCAL CONCERNS (pages 183-195)

HEALTH

Comment: There are no skilled nursing facilities or drug abuse clinics in the basin (Lake Tahoe Audubon Society) and no health services are provided by Douglas County at South Shore (LTSLT). (page 183)

- **Response:** The text should be revised to read:

Barton Memorial Hospital in South Lake Tahoe is the only hospital in the Lake Tahoe Basin. The hospital, with 62 licensed and 28 unlicensed beds, serves the population in the southern part of the basin from Spooner Summit to Strawberry Hill. Half of the patients are tourists, and of the local patients, nearly all are from California. Although there are some board and care facilities, there are no skilled nursing facilities in the basin. Other health/counseling services, such as mental health, education, family planning, and rehabilitation, are provided by El Dorado and Placer counties and various social service organizations. Residents of the Nevada side of the basin also use these services or, more typically, will go to Carson City or Reno.

SCHOOLS

Comment: The analysis overestimates the capacity of the Lake Tahoe Unified School District. Double-sessions, listed as a mitigation measure, would not be acceptable to the community. Inadequate attention is devoted to identifying methods to find new school facilities. (pages 185, 186, 194) (Lake Tahoe Unified School District)

Response: Based on interviews after the DEIS was published, it was determined the capacity of the schools in the Lake Tahoe Unified School District was about 4,600 students (Ken Lowry, Superintendent, Lake Tahoe Unified School District, telephone conversation, September 12, 1980). In the fall of the 1980, district enrollment was 4,150 students, not including the enrollment at the continuation school. The capacity of the school district would permit an enrollment increase of about 450 students, assuming current district policy.

The district's capacity would be exceeded by the student enrollment generated by growth estimated for Scenarios 2, 3, and 5. Under these growth scenarios, the impacts would probably be most acute for elementary students (grades K-6). The difference between school capacity and future enrollment would probably be sufficient to warrant a new K-6 school.

For secondary students (grades 7-12), the difference between school capacity and future enrollment may be too small to warrant the construction of new school facilities. The excess enrollment to secondary grades might be accommodated by several methods, including year-round instruction (which, if adopted, should probably apply to K-6 schools as well) and double school shifts (perhaps a possibility only at the high school). It is uncertain whether methods such as these would be adopted by the district's Board of Education or by the voters in the district (who may be required to approve policies such as compulsory year-round instruction).

Although methods may be available to accommodate the future secondary enrollments under the higher growth scenarios without constructing new school facilities, it is unlikely that all elementary enrollments could be accommodated by similar means. Even if year-round instruction were adopted for all grade levels and the capacity of existing schools were thereby increased, K-6 enrollments would probably still be large enough with Scenarios 2 and 5 to necessitate a new school.

Since the passage of Proposition 13, school districts in California are restricted from using voter-approved bonds to finance the cost of new school facilities. Other methods are available, however, to accommodate enrollment growth.

The Emergency Classroom Law of 1979 provides that facilities may be leased at a rate of not more than \$2,000 per unit from the State of California. To be eligible for the program the district must furnish evidence to the State Allocation Board that it has no available bond proceeds which could be used for the purpose of classroom facilities.

The school district can also levy developer impact fees on new housing construction. These fees, also called bedroom taxes since they are typically levied on a per-bedroom basis, can be used to provide relocatable classrooms. The fees may not exceed the amount necessary to pay five annual lease payments for interim facilities. In lieu of the payment of fees, the builder may at his/her option and expense provide interim facilities owned or controlled by the builder at a place designated by the school district. At the conclusion of the fifth school year, the builder would remove the interim facilities from the school site.

Development liens are another method for funding school facilities. With this method, the school district would establish a non-profit corporation and lot owners or developers would create an assessment district. Liens would be imposed on lot owners or home purchasers to be used to repay bonds purchased by the non-profit corporation. This method may have limited applicability in the Lake Tahoe Basin, however, since large scale developments are unlikely and the creation of an assessment district would require the approval of 100 percent of the lot owners.

A fourth source of financing for local school construction in California is the State School Facilities Fund. This fund is the most likely source of financing for permanent school facilities. Over \$300 million has been assigned to this fund for the 1980-81 fiscal year. Future levels of funding are likely to fluctuate from year to year.

Comment: The DEIS underestimates the excess capacity of the Douglas County School District. The schools in the basin portion of the district should be able to accommodate an additional 500 students, not 100-200 students. (page 185) (DCPD)

Response: Recent improvements to existing schools and the construction of new school facilities in the Lake Tahoe Basin and Carson Valley portions of the Douglas County School District have increased the enrollment capacities beyond the figures cited in the DEIS. Based on school enrollments as of October 1980, the schools in the basin portion of the district could accommodate about 640 additional students. The schools in the valley portion could accommodate about 1,420 additional students (Louis Hirschman, Assistant Superintendent-Business Services, Douglas County School District, telephone conversation, January 27, 1981). These estimates assume maximum utilization of school facilities.

For the basin portion of the district, the number of additional students between 1978 and 2000 as estimated for Scenarios 3, 4, and 5 would exceed the capacity of local schools. New school facilities would be required to accommodate future enrollment growth under these scenarios.

For the valley portion of the district, the number of additional students between 1978 and 2000 as estimated for Scenarios 4 and 5 would exceed the capacity of local schools. New school facilities would be required to accommodate future enrollment growth under these scenarios. The enrollment growth estimated for Scenario 3 would approximately match the capacity of schools in the valley portion of the district.

LAW ENFORCEMENT

Comment: The present ratio of sworn police officers per thousand permanent residents in the City of South Lake Tahoe does not agree with the ratio shown in the draft EIS. The present ratio is 2.2 officers per 1,000 residents. (page 182) (SLT)

Response: The City's ratio of sworn police officers per thousand residents has varied in recent years with changes in the permanent population and the staffing of the police department. In 1978, when this section of the DEIS was prepared, the ratio was 1.7 officers per thousand residents. In late 1979-early 1980, when the City's responses to the DEIS were prepared, the ratio was 2.2 officers per thousand. In the late 1980, the ratio was 2.0 per thousand, based on 45 sworn officers and a permanent population of 23,000.

Comment: The description of law enforcement services omits reference to the California Highway Patrol, Nevada State Police, California Fish and Game Wardens, and USFS patrols. (page 183) (SLT)

Response: The emphasis of the analysis of the public service and fiscal impacts was to identify the effects of growth on the costs for local services and on the revenues required to fund those services. Local services and revenue sources will be most directly affected by growth in the Lake Tahoe Basin. State and federal services seldom respond to growth in the same fashion as local services. This is because the policies that govern the provision of state and federal services must consider service needs in many areas, and because the revenues that fund state and federal services are only minimally affected by growth in an area as small as the Lake Tahoe Basin.

The current staffing ratios of these state and federal law enforcement services would provide little indication of how service delivery might respond to future growth. The budget constraints faced by the California Highway Patrol, for example, have resulted in major statewide staff reductions in recent years in the face of increasing traffic volumes. No staff additions are anticipated in the foreseeable future. Consequently, the need for officers in one area can only be filled by transferring officers from another area. The demand for local services must be quite acute in relationship to statewide needs to warrant transferring personnel (Conrad Menzel, Assistant Chief, Valley Division-California Highway Patrol, telephone conversation, January 27, 1981).

In general, growth may affect the need for state and federal law enforcement services, but the provision of these services will be based on very uncertain policy and budgeting factors.

FIRE PROTECTION

Comment: More detailed information should be provided to describe the existing condition of fire protection services in the study area. (page 184) (SLT)

Response: Fire services are discussed in more detail on pages 212 - 213 of the Technical Appendices. The description of service capabilities was based largely on a CTRPA study, An Analysis of the Carrying Capacity of the California/Tahoe Region (1977). Extensive descriptions of the existing staffing and equipment of California fire services are available in that report. More recent analyses, such as that in the Economic and Fiscal Effects of SWRCB's Water Quality Plan for the Lake Tahoe Basin (Recht Hausrath & Associates, 1980), also provide descriptions of service capabilities.

The Insurance Services Office (ISO) ratings for the fire agencies within the study area are shown below. The ISO ratings are based on a scale of 1 to 10, with 1 representing the best fire service.

<u>Fire Agency</u>	<u>ISO Ratings</u>
City of South Lake Tahoe	6
Lake Valley Fire Protection District	7
Tahoe Douglas Fire District	5
Kingsbury Fire District	5
Douglas County Fire District	7-9

SOLID WASTE MANAGEMENT

Comment: It should be noted that the trip distance from the transfer station in the City of South Lake Tahoe to the Gardnerville landfill site is 97 miles, round-trip. (page 184) (Douglas County Planning Department, NDEP)

- **Response:** The text should be revised to read:

Garbage and solid waste from the transfer station are transported to a 112-acre sanitary landfill east of Gardnerville in Douglas County, Nevada, a round trip distance of 97 miles.

Comment: DEIS does not mention that solid waste is collected from the Douglas County portion of the basin by the South Tahoe Refuse Company. (page 184) (SLT)

Response: Amend the first sentence in the discussion of Solid Waste Management to read:

- Jurisdictions within the south shore portion of the Lake Tahoe Basin (the City of South Lake Tahoe, El Dorado County, and Douglas County) contract with the South Tahoe Refuse Company for solid waste collection and disposal services.

Comment: Are solid waste volumes included in the impact assessment table based upon current volumes contained in the El Dorado County Solid Waste Management Plan? (page 187) (SLT)

Response: The 1978 volume for solid waste handled at the South Tahoe Refuse Company station is based on personal communications with the transfer station operation, as explained in the DEIS Technical Appendices (page 215). The County's Solid Waste Management Plan indicates that the volume of municipal wastes in the Lake Tahoe area handled by the South Tahoe Refuse Company totalled 109,231 cubic yards in 1975, and are projected to reach 187,085 cubic yards from El Dorado County alone. Thus, it is believed that the DEIS estimate, obtained from the refuse company operator, of 186,500 thousand cubic yards is reasonable.

Comment: The expansion plans being considered by the South Tahoe Refuse Company should be discussed. (page 188) (SLT)

Response: Brief mention of these expansion plans are made on page 188, paragraph 3, and again on page 189, paragraph 1 of the DEIS. A detailed description of the project is found on page 228 of the DEIS Technical Appendices. The project as described by the South Tahoe Refuse Company would require the construction of an additional door to facilitate circulation and unloading operations of packer trucks and would call for the expansion of the facility's storage area to accommodate expanded efforts to recycle wastes. At the time DEIS was being prepared, CTRPA indicated it had not received a formal application for the project to review, but that the proposed expansion would be subject to close review because of possible encroachment in a stream environment zone and because of traffic congestion. Specifically, "The Agency's concern over granting the franchiser the right to increase its facility on this site is twofold. First of all, part of the site is in land capability 1B, a stream environment zone. Secondly, the transfer station is located in a high density area. The Agency is concerned over promoting growth by traffic generators at the "Y". (CTRPA, An Analysis of this Carrying Capacity of the California/Tahoe Region, 1977) Because part of the proposed site is in a stream environment zone, there are stringent land coverage limitations which may prevent the facility from being expanded. However, the CTRPA staff recommended that Section 6.12 of the CTRPA land use ordinance be changed to include the South Tahoe Transfer Station as a "Regional Transportation Facility." This status allows South Tahoe Refuse Company the right to apply to the Governing Board for a coverage override. CTRPA has approved the expansion, although no construction has begun.

The following correction should be made to the text (page 189, paragraph 1, last sentence).

- CTRPA has approved the plan and during the review identified two issues: first, part of the site is in a stream environment zone where site coverage is limited by the land use ordinance to 1 percent; second, an expanded station may exacerbate traffic congestion in this heavily travelled area.

Comment: The DEIS claims that the Gardnerville landfill has adequate capacity over the next 20 years. In contrast, it is believed that the site is near capacity. (page 188) (SLT, DCPD)

Response: The El Dorado County Solid Waste Management Plan, page 5-5, indicates that "the Douglas County landfill site has a life expectancy of fifty years (South Tahoe Refuse Company estimate) if the volume of material daily does not escalate appreciably."

Comment: It is not enough to encourage recycling and resource recovery efforts; such measures must be required. (page 195) (LTS/LT)

Response: According to the El Dorado County Solid Waste Management Plan, November 1978 (page 6-7), "With present technology and the projected amount of solid waste generated by El Dorado County, there is no known system on the market which could be economically feasible in El Dorado County for resource recovery." There is the possibility of undertaking such programs, if solid waste collection and disposal is undertaken on a regional basis.

The formation of the Tahoe Basin Association of Governments in late 1979 was aimed at encouraging cooperative planning and implementation of programs on a basinwide level. The organization, formed through a joint powers agreement involves the legislative bodies of the City of South Lake Tahoe, and El Dorado and Placer counties in California and Carson City, Washoe and Douglas counties in Nevada. A grant provided by the U.S. Environmental Protection Agency has enabled the organization to undertake a solid waste management plan for the basin.

In the interim, in light of the uncertainty over the economic feasibility of such efforts, the DEIS suggests that these efforts be encouraged rather than mandated.

Comment: Many of the solid waste mitigation measures suggested are already being undertaken and these efforts should be recognized. (SLT)

Response: The discussion of these mitigation measures in the Technical Appendices of the DEIS (pages 228-230) does mention South Tahoe Refuse Co.'s proposal to expand the transfer station and expand recycling efforts. The formation of the Tahoe Basin Association of Governments occurred while the DEIS was nearing completion, so that its efforts were not known. However, the organization is discussed in the previous response.

Comment: The discussion of solid waste management plans mentions that Douglas County has prepared such plans for the unincorporated areas. The Douglas County Planning Department has indicated that it is unaware of such a plan having been prepared. (page 195) (DCPD)

Response: The Nevada Division of Environmental Protection has indicated that county solid waste management plans are required. However, because Douglas County was participating in a basinwide effort at solid waste management, as a member of the Tahoe Basin Association of Governments, it was felt the county was

making reasonable progress and the state would review the document prepared by the association. (Ross, Nevada Division of Environmental Protection, personal communication.) It is assumed that the plan referred to in the DEIS, based on information obtained from NDEP, was actually the basinwide solid waste management plan, which was just getting underway as the DEIS was being prepared.

FISCAL CONCERNS

Comment: The economic effects of the different growth scenarios on local communities were not assessed in the EIS. (David Moser)

Response: Numerous economic impacts were identified in the DEIS. The growth scenarios outlined the changes in permanent and visitor population, employment, housing units, casino floor space, commercial floor space, and hotel/motel rooms that could be anticipated in the DCSID and STPUD service areas between 1978 and 2000. The impact analyses discussed the effect of the growth scenarios on housing quality and affordability. The implications of the alternatives on public services such as police, fire protection, public schools, health care, and solid waste disposal were identified. The report also discussed the effects on the expenditures required to provide these services and on the public revenues necessary to finance the services.

Comment: Explain what is meant by the conclusion that, with Scenario 1, no new capital facilities would be needed for water services. (page 190) (SLT)

Response: The statement in the impact assessment table on page 190 summarized the conclusion that the levels of growth estimated under Scenario 1 would not require additional capital facilities for water supply provision and water treatment. It was not intended to imply that water distribution facilities would not be needed. Some new water mains may be needed (and certainly some improvements to existing water distribution facilities would be required) with all growth scenarios.

However, recent research, since the DEIS was prepared, indicates that capital facilities would be needed to provide water supply for all scenarios. Even with low levels of growth (such as Scenario 1), new wells, storage tanks, or diversion facilities would be required by some water purveyors. This conclusion is based on the findings of the California State Water Resources Control Board (Report on Water Use and Water Rights: Lake Tahoe Basin, 1979) and research by Recht Hausrath & Associates (Economic and Fiscal Effects of SWRCB's Water Quality Plan for the Lake Tahoe Basin, 1980).

As a result of this more recent information, the conclusions related to water services for Scenarios 2 - 5 should apply to Scenario 1 as well.

Comment: The term "special assessments" should be defined more clearly. (page 191) (SLT)

Response: Special assessments are the fees levied to retire bonds used to finance capital improvements such as sewer and water lines, streets, and sidewalks.

Assessment bonds are authorized in California under the Improvement Act of 1911 and the Improvement Act of 1915. In the Lake Tahoe area, assessment bonds have been used as an alternative to public financing of infrastructure in certain subdivisions.

When assessment bonds are used to finance the cost of infrastructure, each landowner in the area served by the capital improvement is assessed a pro rata share of the bonded indebtedness. The share is generally based on the benefit derived from the improvement. Payments are made over a 10-20 year period to retire the bond.

Discussion of the implications of growth on the repayment of existing special assessments is provided in the DEIS Technical Appendices, page 222 - 223. Also see the Economic and Fiscal Effects of SWRCB's Water Quality Plan for the Lake Tahoe Basin (Recht Hausrath & Associates, 1980).

Comment: The table describing per-unit public service costs needs more detail and clarification. (page 190) (SLT)

Response: The table on page 190 is a summary of a per-unit service cost implications described in more detail in other sections of the DEIS. Refer to pages 184-197 in the DEIS for a discussion of the impact of the alternatives on public service delivery, and to pages 217-219 in the DEIS Technical Appendices for a discussion of the effect of service demand on public service costs.

Comment: As a mitigation measure, the DEIS proposes that developers be required to provide infrastructure and major service facilities or to contribute funds for such improvements. Yet it is not possible or practical to require single-family development to finance this type of public service expansion. (page 194) (SLT)

Response: Many California communities require developers to pay for infrastructure that, until recently, had been financed at public expense. The capital costs for streets, sewer mains, and water mains are the most common expenses that developers are now responsible for in many areas. These costs are passed on to the consumer in the form of higher housing prices.

The policy of requiring developers to pay for infrastructure typically has the least effect on housing prices when costs can be spread over many units. Where large subdivision development is less likely, such as in the Lake Tahoe Basin, the effect of such a policy on housing prices can be more pronounced.

For small subdivisions and single-lot housing developments, it may not be reasonable in some cases to assess the developer for all costs associated with providing necessary infrastructure. Yet, many single-lot developments would be located in areas already served by roads and sewer and water facilities, so the effect on housing prices could be minimal.

In general, the feasibility of this mitigation measure would be limited in the Lake Tahoe Basin since developments there may not be large enough to support the full cost of improvements without a significant effect on housing prices.

Comment: Regional tax base sharing is suggested as a mitigation measure. Further discussion of this proposal is warranted. (page 194) (SLT)

Response: A description of this mitigation measure is provided on page 226 of the Technical Appendices to the DEIS.

Comment: The discussion of how fiscal impacts are affected by the location of growth in California or Nevada is "naive and simplistic." Revenues from gaming have high county service costs associated with them. A recently-enacted spending limitation will affect the provision of county services. (pages 193-194) (DCPD)

Response: The analysis on pages 193-194 is a summary of a careful and comprehensive evaluation of the revenue sources available to local service agencies and the implications of location on the potential for revenue generation. As discussed in more detail in the Technical Appendix, differences in tax laws between California and Nevada result in significant differences in the amount of revenue that can be obtained from similar land uses. Assuming two homes of identical value with identical household characteristics, the one located in Nevada would generate about 180 percent more property tax and sales tax revenues for local agencies than the one located in California (at maximum allowable tax rates). Moreover, the assessed value of property in Nevada can rise with increases in the full value of property. In California, the assessed value of property grows at a much slower pace, since Proposition 13 limits increases in market value to 2 percent per year (unless the property is sold).

Several revenue sources available to service agencies would be fairly sensitive to the amount of growth permitted in Nevada and California. The property tax, sales tax, transient occupancy tax (or room tax), and gaming fees and taxes would be the most important of these. Development in Nevada would be able to generate more property and sales tax revenues per unit of service output than similar development in California. There would be little difference in per-unit transient occupancy tax revenues between Nevada and California (except if average room rates are significantly higher in Nevada). Gaming revenues, of course, are available to Nevada service agencies but not to California agencies. Consequently, gaming revenues provide Nevada service agencies with better potential than California agencies to match revenues and increasing service demands.

If gaming required very high service costs per unit of revenue, then perhaps the advantages of gaming revenues to Douglas County would be somewhat diminished. This does not appear to be the case, however. The county provides very few direct services to the gaming establishments at the south shore. Fire protection, sewer, and water services are provided by separate service districts. Property taxes fund the fire district, and service fees finance the operations of the sewer and water districts.

Law enforcement is the most significant of the county services provided to the gaming establishments. The budget of the sheriff's department (for services countywide not just to south shore casino areas) represents about 30 percent of the county's annual general fund expenditures, and about 13 percent of the county's total annual expenditures. The revenues the county receives from gaming fees and taxes, however, exceed the entire budget of the sheriff's department. Other revenues from gaming establishments, including property taxes, sales taxes, liquor license fees, and room taxes, are also available to fund county services.

The Nevada legislature recently approved a spending limitation for local governments. This law restricts future increases in general fund expenditures to the percentage increase in population plus 80 percent of the cost-of-living increase. The effect of this law on services provided by the county is uncertain. Between 1976-77 and 1978-79 (prior to the enactment of the spending legislation), the county's general fund expenditures increased by 35 percent. The spending legislation would have permitted a larger increase, on the order of 42 percent.

Even if the spending limitation does affect Douglas County's expenditures for services, the county will not be at a fiscal disadvantage compared to California. This is because California governments also must operate within similar spending limitations established several years ago by Proposition 4.

Service agencies in Nevada would have a relatively greater ability to generate property and sales tax revenues per unit of service output and, because of the availability of gaming revenues, can obtain a better match between revenues and service demand.

UTILITIES (pages 195-210)

WATER SUPPLY

Comment: The discussion on water supply should clarify the status and use of the Interstate Compact and mention that the Compact has not been approved by Congress. (page 195) (Lake Tahoe Audubon Society, NDEP, LRWQCB)

Response: The information presented below will help to elaborate upon the DEIS discussion of water supply:

After thirteen years on negotiation, the California-Nevada Interstate Compact was approved by California in 1970 and by Nevada in 1971. The Compact serves as the only comprehensive basis for determining the amount of water which is available for use within the Lake Tahoe, Truckee River, Carson River, and Walker River Basins. Although litigation has been initiated within the federal courts, the Compact has not been ratified by Congress. The available water supply within the Lake Tahoe Basin is directly affected by several unresolved issues:

- Legal proceedings are occurring in the federal courts to establish the water rights of the Paiute Indians at Pyramid Lake. Resolution could result in federal legislation which would reduce water supplies available to California and Nevada.
- Under the Compact, water supply appropriations include both surface and groundwaters. However, permits for groundwater use are not presently required under California law. Therefore, there is no accurate method of comparing actual use with Compact allocations of groundwater.
- Conservation measures could be instituted to effectively reduce water use.

Both states are obligated to ensure water use does not exceed appropriations under the Compact. Water use diversions are limited to 23,000 acre-feet per year within the California portion of the basin and to 11,000 acre-feet per year within the Nevada portion. These diversions represent total annual gross diversions for use within the basin from all natural sources including groundwater rights. An additional section of the Compact also provides for diversions for nonconsumptive purposes provided that such uses result in no discernible reduction of water available for either state. Also, provided that certain conditions are met, there are provisions for obtaining increases beyond the above amounts.

Comment: The discussion on water use should be updated to reflect the California State Water Resources Control Board's water use and rights report. (pages 196-197) (LRWQCB)

Response: The figures on water use and rights in the DEIS (pages 196-198) were obtained from the SWRCB before the final report had been released. The following information supplements the discussion of water use in the Lake Tahoe Basin, based on the final document.

In October 1979, the California State Water Resources Control Board completed a study on the water use and rights within the Lake Tahoe Basin. The report provides recommendations for administering water rights within the basin and ensuring land use decisions are consistent with the interstate obligations of California. Table 12 of that report (reproduced here as Table 15) shows, approximately 19,000 acre-feet per year is available for municipal, domestic, and agricultural use on private lands within the California portion of the basin. Approximately 4,000 acre-feet per year is attributed to other uses. The DEIS (on page 196) provides a rough breakdown of these other uses. The figures should not be interpreted as originating in the Compact. They are merely assumptions made by the State Water Resources Control Board staff in arriving at a recommended equitable allocation of the 23,000 acre-year per year under California water rights law in fulfillment of California's responsibility as required by the water compact. The maximum rate of water use on private-owned lands within the California portion was estimated as 13,900 acre-feet per year during the 1974 to 1977 period. The demand during drought conditions was approximately 11,300 acre-feet per year.

Comment: The following assumptions assessing the impacts on water supply (page 197-198) are questioned:

- that limitation on water supply be established at 12,000 acre feet per year (STPUD),
- that the ratio of wastewater flows to water supply will not differ much from varying growth levels (STPUD, NDEP), and
- that the variation in water use under each scenario will change only as a function of sewage flows (LWRQCB).

Response: The figure of 12,000 acre-feet per year was a preliminary recommendation made by the SWRCB for its water rights study. The final document, issued in January of 1980, recommends that the State Board issue new water rights permits provided that water use does not exceed California's allocation. The available water can be allocated among three zones which correspond to the division of the basin among the public utility districts. The amount of water each public utility district could divert would be based on the amount of water allocated to the zone it serves (STPUD lies within Zone C), minus the total of all other diversions, including groundwater diversions for use on private lands. For STPUD, the proposed allocation of water is 12,100 acre-feet per year.

As a further measure to ensure that the limitations in the Interstate Compact are met, the water rights study recommends a close evaluation of the relationship between sewage flows and water use. The California Water Code directs State Board and Regional Boards to take water supply into account during water quality planning and in issuing waste discharge requirements. The public utility districts provide sewerage service, for which they are subject to waste discharge requirements issued by the Lahontan Regional Board. Any additional development in the basin, which will increase water use, will not be possible without a connection to the sewerage systems. The number of units which may connect to the sewerage systems is limited by sewage treatment capacity. Accordingly, the study recommends that waste discharge requirements issued for these sewerage systems include conditions designed to prevent water use in the basin beyond the compact limitations. The conditions could take several different forms, ranging

TABLE 15
WATER USE AND WATER RIGHTS SUMMARY FOR
THE CALIFORNIA PORTION OF THE LAKE TAHOE BASIN

WATER USE ZONE	PRESENT WATER USE (AFA)				REPORT ALLOCATION (AFA)	POTENTIAL DEMAND (AFA)		WATER USE RATES (gal/day)	
	Approp- riative Rights	Ground Water Diversions	Other Diversions	Total Diversion For Use		Min-Max	Builtout Demand	Expansion Demand (TRPA)	Per Capita
North Tahoe Zone A	1308 (11%)	92 (1%)	427 (3%)	1827 (15%)	1763-2067	2815- 4815	3719- 6476	159	272
West Tahoe Zone B	697 (6%)	1402 (11%)	828 (7%)	2927 (24%)	2394-3303	4466- 7673	9888- 16435	210	355
South Tahoe Zone C	1208 (10%)	5210 (42%)	1163 (9%)	7661 (61%)	6936-8518	12647- 16966	16405- 22135	147	258
TOTAL CALIFORNIA TAHOE	3293 (27%)	6704 (54%)	2418 (19%)	12414 (100%)	11093-13888	19,000	30012- 45046	160	277
• Sewer infiltration water exported from the Basin									
					600				
• Depletion associated with lake storage and flow enhancement									
					500				
• Potential State of California water requirements									
					350				
• Water Rights currently held by U.S. Forest Service									
					2,550				
TOTAL WATER ALLOCATION TO CALIFORNIA PORTION OF BASIN IN INTERSTATE WATER COMPACT					23,000				

Source: California State Water Resources Control Board, Report on Water Use and Water Rights, October 1979.

from connection limitations to water conservation programs. The precise form the conditions shall take will be determined when waste discharge requirements are renewed or modified.

Municipal wastewater flow rates vary throughout any 24-hour period with the lowest flows occurring in the early morning hours and the highest flows occurring in the early afternoon. The ratio of peak dry weather flow to average dry weather flow is referred to as the peaking factor. As the population of a service area increases, the peaking factor will decrease. In other words, as use increases, the peak demand diverges less from the average demand. This phenomenon accounts for the variation in peaking factors among the different growth scenarios. For STPUD, the low growth scenarios (Scenarios 1 and 4) have greater peaking factors than the higher growth scenarios (Scenarios 2 and 5). The medium growth scenario, Scenario 3, has an intermediate peaking factor. The same variations have been made for DCSID: high peaking factors for Scenarios 1 and 2 which represent less growth, intermediate for Scenario 3, which represents a medium level of development, and low for Scenarios 4 and 5, which represent high growth levels.

STPUD states that it believes the ratio of wastewater flows to water supply will be about the same for all levels of growth. The DEIS in determining water use did keep the ratio of wastewater flow to water supply constant among scenarios (see page 199). However, the wastewater flows, upon which water use is determined, vary and are derived using assumptions found on pages 200-201 of the DEIS. It will be seen upon review of those assumption that some attempt was made to recognize the observed trend of greater occupancy rates.

Comment: The north shore's projected water needs should be considered since water is allocated basinwide. The conclusion that water supplies may limit growth can probably be supported, but a more immediate problem is the allocation of available supplies among competing water supplies, particularly in Douglas County. (page 199) (LTSLT, TRPA, LRWQCB)

Response: Potential water demand on the California side of the basin has been projected and is presented in the response above and shown in Table 12. The SWRCB's study also reports that it is doubtful that water supplies accommodate growth beyond would be adequate to the buildout of the existing subdivisions in Nevada. Moreover, the Lake Tahoe Basin Water Quality Management Plan Draft Environmental Impact Statement by TRPA (February 1981) refers to a TRPA staff report that "concludes the Incline Village General Improvement District will exceed its present water rights allowance if all parcels in existing subdivision within the district are built out." It should be recognized that the Nevada State Engineer, over the past 10 years, has acted to limit the amount which may be diverted on the Nevada side of the basin in order to ensure that diversions will not exceed the amount allocated in the Compact. Still, the existing rights allocated in Nevada total 13,942 acre-feet year, nearly 3,000 acre-feet per year more than the state's allocation. In spite of what is indicated in the impact assessment table, the probability that the State Engineer would approve any new or pending water rights applications is highly remote.

Comment: North Tahoe and Tahoe City PUD have metered all water customers at a per unit cost less than STPUD's estimates. (page 208) (LTSLT)

Response: Such comparative cost figures are useful and suggest STPUD could reinvestigate the cost of metering and possibly revise its estimates.

Comment: The cost of enforcing and administering water conservation programs should be addressed. (pages 207-208) (NDEP)

Response: One method of achieving water conservation is to restrict use during specified times. This can be accomplished through local ordinances, regulations, or building code provisions. Several utility districts have mandated watering ordinances with varying degrees of success. The principal impact of ordinances is often associated with peak hour and maximum day demand. The impact on the total amount of water used is typically secondary. The environmental impact in financial aid costs of mandated watering programs can only be accurately measured through regulation should be accompanied by educational and public awareness programs. Typical expenditures for moderate to large-scale educational programs range from \$20,000 to \$200,000. Based upon historical projects, a \$40,000 to \$60,000 educational program could effectively reduce average water use by five percent and peak consumption during the summer by 20 percent. A typical program consists of public displays, school seminars, billboards, bill stuffers and other forms of publicity.

WASTEWATER TREATMENT

The description of existing wastewater treatment facilities and compliance with water quality standards, as well as the proposed facilities, has been completely rewritten to respond to comments submitted on the DEIS and to the supplemental facility plans prepared by the districts. The revised discussion is presented in Chapter III. A summary of the major comments is offered below.

Comment: Regarding plant capacity, there is:

- a need to account for illicit waste disposal systems (LRWQCB),
- desire to further evaluate the assumptions used on page 202 to determine the number of sewer units (STPUD, NDEP), and
- a need to account for wastewater flows generated by visitors (STPUD).

Response: The response to these comments is contained in Chapter III of this document which reassesses treatment plant capacity requirements.

Comment: Regarding effluent disposal there is:

- a need to further discuss the water quality impacts on the Carson River and Indian Creek Reservoir (LRWQCB, Friends of Alpine, Nevada Division of State Parks, Department of Water Resources, Abbe),

- a need to further discuss health impacts of reclamation (LRWQCB),
- a need to address possible odors and impacts on soils and groundwater (Friends of Alpine), and
- a need to identify increased opportunities for recreation/open space (Nevada Division of Parks).

The response to these comments is found principally in documents prepared for the district, including the DEIS, the Facility Plan, the Facility Plan Update and Technical Appendix. These studies are available at the STPUD's offices in South Lake Tahoe. A brief summary of the direct impacts from project implementation is offered on pages 80-81.

Comment: There is:

- concern over the cost estimates represented in the DEIS for project implementation (page 203) (STPUD),
- a need to describe the problems with the export system (LRWQCB),
- a need to discuss the implications of water conservation and collection line maintenance on the plant capacity (CTRPA).

Response: The response to the first two items is contained in the discussion of the updated facility plans (see Chapter III). The response to the third item is found in STPUD's Facility Plan which discusses potential wastewater flow fluctuations resulting from infiltration and inflow and from water conservation. The analysis indicated flows from the infiltration and inflow (in part, a result of poor collection lines) were non-excessive, although some further reductions could be accomplished by implementing specific control measures. The district concluded no reduction in infiltration and inflow should be considered in predicting future system flows (see pages IV-12-21, IV-28 of the Facility Plan). With respect to water conservation efforts, it was estimated that a maximum reduction of 10-15 percent could be accomplished. However, it was pointed out that

"In wet years it will be difficult if not impossible to limit water use. Also, there is a real question as to whether water conservation can reduce water use by the large number of visitors to the Tahoe area on maximum days and at peak hours."

Accordingly, no allowance for water conservation was made (see pages IV-21-28 of the Facility Plan).

Comment: With respect to DCSID, there is a need to clarify DCSID's recommended program, (LTSLT, Brecher, LRWQCB, NRDC) and to describe the various measures the district had undertaken on its own to improve its treatment capabilities. (DCPD, Williams, Huss, Kjer, NDEP)

Response: The response to these comments is contained in Chapter III of this document which describes the district's recommended project and outlines the

various improvements the district has undertaken. The existing facility is to be modified to accommodate a maximum monthly flow of 3.75 mgd. It should be noted that the district has not responded to requests to participate in the Mitigation Program described in Appendix B of the FEIS, and as a result, this EIS is being finalized for the proposed STPUD project only. Before future requests for grant assistance can be awarded, the DCSID must demonstrate its commitment to mitigate primary and secondary adverse impacts.

Comment: Water quality impacts on the Carson River are not as serious as described in the DEIS (page 278) (Carson River Basin Council of Governments, DCPD, Williams, NDEP, LRWQCB).

- **Response:** A review of the district's facility plan and supplement reveals that the DEIS should be revised to indicate elimination of DCSID discharge to the Carson River would reduce streamflow, as well as waste loads to the river. The annual average flow reduction of 3 mgd, or 4.6 cubic feet per second, downstream of Muller Lane is a significant portion of the dry season flow. By eliminating the present discharge into the East Fork of the Carson River, the water quality in the river will be more uniform throughout the Carson Valley. The phosphates and nitrates which are part of the wastewater effluent are eliminated from the river waters.

The proposed wastewater disposal system will require careful monitoring to assure that there is no measurable surface water runoff from the irrigated lands. If any irrigated wastewater does reach the Carson River, it could potentially be of a lower quality than the present treated wastewater effluent discharge. This degradation could result from runoff from pasture lands, pesticide residues from the lands, and nitrates and phosphates in the wastewater effluent. A system of collecting surface runoff and recycling the return flows will be required to eliminate this potential problem.

Comment: The discussion of impacts on the DCSID facility from the various growth scenarios is incorrect and should be revised; particularly, the description of critical implications. (page 202) (NDEP)

- **Response:** The text should be revised to read:

A similar situation applies for DCSID, as the required maximum day capacity under each scenario exceeds the present baseline capacity of 2.3 mgd. Treatment plant modification to improve reliability and allow the plant to treat a maximum monthly flow of a 3.0 mgd (or 4.5 mgd maximum daily) would enable the district to accommodate growth from Scenarios 1, 2, and 3. Plant expansions beyond the original design would be required to accommodate Scenarios 4 and 5.

The second paragraph should be revised to read:

- Expansion and process modifications would be required for the higher growth levels. A lawsuit seeking an immediate Cease and Desist Order against DCSID was filed by EPA and the National Resources Defense Council for discharge quality violations. In the meantime, the district has elected to construct some of the modifications recommended in the plant performance measurably. In May of 1979,

the case was heard in court, and it was determined EPA and the Natural Resources Defense Council were unable to demonstrate the immediate need for a Cease and Desist Order. As a result of the decision, though, DCSID has agreed to a scheduled program of improvements.

ENERGY

Comment: The energy requirements of the alternatives have not been examined. (SLT, OPR, Resources Agency)

Response: The direct energy requirements of the facilities proposed by the STPUD are addressed beginning on page 211 of the DEIR prepared by Jones & Stokes Associates.

The energy requirements of the various growth scenarios are contained in the DEIS beginning on page 205 for the Lake Tahoe Basin and on page 278 for the Upper Carson River Basin. An explanation of the methodology used to arrive at the consumption figures is found in the DEIS Technical Appendices beginning on page 241.

Comment: Further discussion of the energy impact mitigation measures is needed. (pages 209-210) (NDEP)

Response: A discussion of the suggested mitigation measures for energy impacts is found on pages 243-246 of the Technical Appendices of the DEIS.

CULTURAL, ARCHAEOLOGICAL AND HISTORICAL RESOURCES (pages 210-212)

Comment: The basis of the information provided on cultural resources is not apparent. (page 210-213) (IAS)

Response: A more complete discussion of cultural resources is presented in the Technical Appendices to the DEIS, beginning on page 247. The information presented addresses the ethnographic, archaeological, and historical background of the Lake Tahoe and Upper Carson River Basin, and includes standard sources on anthropological and cultural resources management. Also referenced is standard archival review which was accomplished at the State Archaeological Site Survey Regional Offices and the State Historic Preservation Office. As stated on page 210 of the DEIS, detailed cultural resources identification maps (prepared and maintained by the U.S. Forest Service) are available for review.

It is noted, however, that one source which was consulted, but overlooked in the referenced sources, is the National Register of Historic Places.

Comment: Based upon an evaluation of the archaeological report prepared for STPUD, it appears that a number of deficiencies need to be redressed in order to get an overview of the cultural resources of the project area and to adequately assess primary and secondary impacts. Any further work on the mitigation measures or on site evaluation should be included in the Final EIS. (U.S. Department of the Interior, IAS)

Response: Further research undertaken for the DEIS did identify additional archaeological sites within areas being considered by STPUD for its effluent export and disposal systems. A subsequent field investigation was conducted by the California State Water Resources Control Board. The findings are described in a letter from Mr. Raymond Walsh, Division of Water Quality to Dr. Knox Mellon, State Historic Preservation Officer (see page 167). The State Historic Preservation Officer has reviewed the letter and concurred in the findings of no impact.

Comment: The discussion of secondary impacts on cultural resources does not follow the format used for other resources. (IAS)

Response: The format for the discussion of cultural resources is essentially the same as others in the DEIS, except that this is the only section that specifically discusses the direct effects of the proposed action. It was done in order to highlight the need for further archaeological survey.

Comment: The basis for the impact ratings in the impact assessment table is not clear. (page 211) (IAS)

Response: While the treatment of secondary impacts has been reduced to one chart, the basis for developing that chart is briefly described in the paragraph that follows it. Sites within the area of greatest potential for archaeological findings were assumed to be affected by the factors identified. At the same time, a knowledge of how much development would occur under each growth scenario and a general sense of where the development would occur, based on a cursory market

Memorandum

To : Dr. Knox Mellon
State Historic Preservation Officer
Office of Historic Preservation
1220 K Street Hall
Sacramento, CA 95811

Date : MAR 04 1981

In Reply Refer
to: 526:CLC
(916) 322-6655

ATTN: Mr. Mike Rondeau

From : STATE WATER RESOURCES CONTROL BOARD

Subject: SOUTH LAKE TAHOE PUBLIC UTILITIES DISTRICT, PROJECT NO. C-06-1414, CULTURAL RESOURCES CONSULTATION, DETERMINATION OF EFFECT

The South Lake Tahoe Public Utilities District (STPUD) has proposed a wastewater management project to eliminate the problem of direct sewage discharge into the waters of the Tahoe Basin. STPUD's preferred alternative is to upgrade and expand its existing facility to treat 10 mgd of influent, to a secondary level. The effluent disposal would be by land application, in Alpine County. Since the land application method requires a winter storage facility, several proposed reservoir sites were evaluated for impacts to cultural resources in mid-1978 (Peak, 1978). The recommended reservoir site is the one to be named "Heise". The proposed impoundment was surveyed in 1978. There were no cultural or historic properties found in the pool area nor adjacent to it.

A subsequent investigation (Desgrandchamp and Chavez, 1979), conducted for the draft EIS, discovered three recorded sites that apparently were not in the files at the time the studies were being conducted for the EIR. Only one site (Ca-Alp-16) was noted as being present in a primary impact area. The site, located within the confines of the proposed Pocket Ranch Reservoir was visited during April of 1980. The physical remains consisted entirely of a single jasper core, a fence post and several pieces of rusty metal. Regardless of significance, impacts to Alp-16 are moot, since the Pocket Ranch site is not the selected alternative.

As USEPA's designated agency official, the Division has reviewed the cultural resources studies and field inspected the project area. Consequently, we recommend a finding of no effect, based on an absence of cultural resources in the impact area.

Raymond Walsh, Chief
Division of Water Quality
Manager - Clean Water Grant Program

Enclosure

cc: Mr. Mark Zuckerman
Environmental Protection Agency, Region IX
215 Fremont Street
San Francisco, CA 94105

survey (through interviews with realtors), allowed an educated guess to be made over whether a potential archaeological site might be affected.

Comment: The Final EIS should contain specific commitments to mitigating adverse impacts and comply with Section 106 of the National Historic Preservation Act of 1966. Mitigation measures needed to be expanded and elaborated upon, (page 213) (U.S. Department of the Interior, IAS, Advisory Council on Historic Preservation)

Response: The DEIS Technical Appendices (pages 250-251) contain a description of the mitigation measures. The following information is provided to expand the discussion on how secondary impacts following construction of the project can be addressed.

1. All service applicants should be required to conduct detailed Cultural Resource Evaluations for potentially affected properties, prior to project approval and facilities hookup. The evaluations should include thorough reviews of existing historic, ethnographic, and archaeological data and maps for the project areas and following the literature review, comprehensive field reconnaissance of potentially sensitive locations should take place. The cultural resource findings can then be evaluated in light of detailed project plans and meaningful impact and mitigation discussions can be presented. At such a time, potentially affected cultural resources can be ranked by their significance, based on National Register of Historic Places Criteria. All qualified professionals should carry out resource evaluations in compliance with current state and federal procedural/guidelines and codes on cultural resources management.
2. Potentially impacted cultural resources, which are found to be of regional and/or national significance, should be protected and/or preserved by adjusting project plans, whenever such measures are possible. The inclusion of historic and archaeological resources within designated open space areas is a common and preferred measure for minimizing adverse effects on sites, structures and features.
3. In circumstances where avoidance of prehistoric and/or historic archaeological resources is feasible, mitigation measures in the form of data recovery should be considered. Such measures would probably involve multi-phased excavations conducted by a qualified professional familiar with the problems of historic, ethnographic and archaeological research and designs in the study area.
4. The Comprehensive Cultural Resources Management program in the study area should address the concerns of the local Native American community regarding the protection of prehistoric archaeological sites, particularly those known or suspected to contain Indian burial grounds. It is strongly recommended that the development and implementation of all Archaeological Resources Management programs in the subject area include a constant dialogue with Native American representatives.

D. RESPONSE TO COMMENTS ON UPPER CARSON RIVER BASIN ENVIRONMENTAL SETTING AND IMPACTS

WATER RESOURCES AND WATER QUALITY (pages 229-240)

Comments: It should be noted that areas outside of the Upper Carson River Basin are included in Figure 18, "Water Resources," (page 230). This comment also applies to the following figures: Figure 15, "Geologic Units, Hazards & Flooding," (page 215); Figure 16, "Soil Suitability for Wastewater Irrigation," (page 217); Figure 17, "Areas of Primary Biological Significance," (page 221); and Figure 20, "Land Ownership," (page 247).

Response: Only Figures 15, 17, and 18 include mapping in the Truckee River Basin, north of the study area. This was done in order to depict the full geographical extent of the resource being mapped. This is particularly useful for natural resources and hazards. The boundaries of the study area are defined on page 60 of the DEIS, and it is not necessary to include additional explanation on the figures.

Comment: The information in Table 36 "Recurrence Intervals and Floods of Record for the Carson River" (page 234) has been updated and should be incorporated into the EIS. (U.S. Soil Conservation Service)

- **Response:** Table 36 should be replaced and revised with the updated data, presented on page 170.

Comment: It should be mentioned that Nevada has, like California, established beneficial uses of Carson River waters. (page 236) (NDEP)

Response: The 1967 Interstate Water Quality Standards and Plan for Implementation contains water quality standards and "existing and potential water uses" for waters in the state. The Carson River (including both branches) was designated in 1967 with the following "present uses": fish and wildlife, esthetics, irrigation and stock watering; "future uses" include municipal water and industrial water processing and cooling.

At the end of 1980, the Nevada Environmental Commission adopted a new set of water quality standards and beneficial uses. The following water monitor stations were defined for the Carson Valley.

East Fork Carson River:

- Bryant Creek at Stateline
- At Stateline
- At U.S. Highway 395, South of Gardnerville
- At Muller Lane

Carson River:

- At Genoa Lane
- At Cradlebaugh Bridge
- Mexican Ditch Gauge

TABLE 36
RECURRENCE INTERVALS AND FLOODS OF RECORD
FOR THE CARSON RIVER¹

<u>Location</u>	<u>Flow in cubic feet per second for recurrence interval</u>			
	<u>100 yrs</u>	<u>50 yrs</u>	<u>25 yrs</u>	<u>10yrs</u>
East Fork Carson River near Gardnerville (103090)*	20,350	14,400	10,700	6,900
West Fork Carson River at Woodfords (103100)*	8,450	5,250	3,700	2,300
Carson River near Carson City (103110)*	40,250	26,400	16,000	8,400

<u>Date Month/ Year</u>	<u>East Fork</u>		<u>West Fork</u>		<u>Carson River at Carson City</u>	
	<u>Peak Flow (cfs)</u>	<u>Recur. Interval (years)</u>	<u>Peak Flow (cfs)</u>	<u>Recur. Interval (years)</u>	<u>Peak Flow (cfs)</u>	<u>Recur. Interval (years)</u>
Dec '37	10,300	25	3,500	25	Not Available	
Nov. '50	12,100	35	4,730	40	15,500	25
Dec. '55	17,600	80	4,810	45	30,000	60
Feb. '63	13,400	40	4,890	48	21,900	35
Dec. '64	8,230	15	3,100	20	8,740	10

*Figures in parenthesis represents Gage Number.

¹A recurrence interval of 50 years indicates that flow, on the average, is met or exceeded once in 50 years. For example, the flow for the East Fork that can be expected to be met or exceeded in the next 25 years is 10,016 cfs. It may, however, occur at any time.

Source: U.S. Department of Agriculture - Soil Conservation Service, Douglas County Flood Insurance Study, February 1978.

For each station appropriate beneficial water uses were designated. The beneficial uses include agriculture, aquatic life, bathing and water contact, drinking water supply, industrial water supply, and wildlife propagation. The Nevada Environmental Commission officially designated each water course in the valley (as described above) the full range of beneficial uses. In order to protect these uses and ensure their preservation for future uses, a set of water quality standards was formulated for each watercourse, at each station.

Comment: The discussion of water quality problems in Carson River fails to mention the degradation associated with the DCSID discharge, as documented by EPA as part of its lawsuit against this discharger. (page 236) (LRWQCB)

Response: A brief description of the lawsuit and the reason it was filed by EPA and the Natural Resources Defense Council (NRDC) is presented in Chapter III. Essentially, the action was initiated because discharges were not meeting the existing Discharge Permit Conditions. However, the courts decided in favor of DCSID on May 10, 1979 stating that EPA and NRDC could not demonstrate the need to impose an immediate Cease and Desist Order in order to protect the environment.

Comment: Disturbance of vegetation and septic tanks should not be treated as natural sources of pollution. Statement that septic tanks cause stream siltation problems and large sediment loads is invalid. (page 236) (LRWQCB)

- **Response:** The text should be revised to read:

Land development which disturbs and strips vegetation and the construction of septic tanks in areas not geologically suitable for percolation of effluent create additional water quality problems. Removal of the natural groundcover, such as vegetation, has accelerated erosion which has caused stream siltation problems in the Upper Carson River Basin and large sediment loads along reaches of the Carson River. Septic tanks on soils not suitable for percolation can result in the effluent percolating too quickly and possibly contaminating subsurface waters or not percolating and creating ponds or wet areas. Again, the effluent is improperly treated and can be a threat to public health.

Comment: Table 38 presents water quality standards and number of violations for various water segments in the Carson Valley. The data only present information for 1975; why not other years? (page 237) (NDEP)

Response: At the time the DEIS was prepared, this was the only known table offering a comprehensive documentation of water quality in the Carson Valley. Data for other years are available, but they have not been edited (from their monthly worksheets) nor have not been compiled into annual reports (Williams, Nevada Division of Environmental Protection, personal communication).

Comment: The comment on groundwater impacts stemming from land disposal of effluent is far too generalized and should be qualified. (page 238) (Carson River Basin Council of Governments, Friends of Alpine)

Response: The text mentions potential groundwater impacts in a very general fashion because little is known on the subject. As a "worst case" situation, the DEIS suggests that effluent percolating through the soils may contaminate groundwater, for the very reasons mentioned by the Council: the vertical and horizontal movement of groundwater is a complex issue. In addition, groundwater volumes are unknown in most instances and would require further investigation before determining the effects of land disposal in groundwater. The Facility Plan Update (February 1981) prepared for STPUD offers little in terms of what impacts might be expected. The NPDES Permit requires the district to monitor the impacts of the land applied effluent on the groundwater.

Comment: The last line on the page implies that bottom nutrients from Indian Creek Reservoir are the primary source of eutrophication and toxicity problems. (page 238, paragraph 5) (LRWQCB)

o **Response:** The last line of the paragraph should be revised to read:

Fish kills have occurred in the reservoir during the spring turnover. It is during this season that reservoir bottom nutrients mix with-surface waters. The primary agents contributing to nutrient mix and ammonia loading of the reservoir is the quality of the effluent discharged by STPUD.

Comment: The discussion of water quality problems does not discuss:

- overflow from Indian Creek Reservoir, increased sedimentation due to land development induced in Alpine County as a result of spillover, possible impact from build-up in the soils of effluent components, possible seasonal odors from secondary reservoir, health impacts of reclamation (LRWQCB, Friends of Alpine).
- impact of discontinuing discharge to Carson River and Indian Creek Reservoir (LRWQCB, Friends of Alpine, Nevada Division of Parks, Ca. Department of Water Resources).

Response: These comments stem from the potential impacts of implementing the STPUD project on Alpine County. A summary of the direct effects associated with the projects is offered on pages 80-81 of this Final EIS. The sources for this information include the Soil Conservation Service's 1980 study of the impacts of land application in Alpine County, the district's Technical Appendix to the Facility Plan Update, and the EIR prepared on the Facility Plan.

Comment: Analysis of impacts on Upper Carson River Basin should mention beneficial impacts from reclamation and reuse of wastewater. (LRWQCB)

Response: As noted in the DEIR on the STPUD wastewater facility program, water supply benefits will be realized by the agricultural industry because the effluent available for irrigation would increase. Because flows will be to a certain extent, more continuous, regular, and greater during the summer, farmers may realize increased yields by being able to irrigate into the summer months.

METEOROLOGY AND AIR QUALITY (pages 242-243)

Comment: Metric and English units are mixed -- all tables and references should be in metric including Table 29. (page 242) (NDEP)

Response: The measurement units of ozone used on page 242 should be changed from ug/m^3 to ppm to be consistent with earlier text. However, the TSP data are normally reported as ug/m^3 and should not be changed.

The text on page 242, paragraph 4, should be revised to read:

- The air quality of the Upper Carson River Basin is generally good. The region is classified as an attainment area for all pollutants. In 1976 thirty-seven violations of the 1-hour ozone standard (0.08 ppm) were recorded, with the second highest concentration equalling 0.10 ppm. (The standard has since been relaxed to 0.12 ppm.)

Comment: The absence of meteorological data only allows a conclusion that the future impacts are unknown. (page 243) (Douglas County Planning Department)

- **Response:** The text on page 243, paragraph 1, should be revised to read:

Impacts of oxidant levels were not specifically evaluated for the Upper Carson River Basin. Because precursor concentrations are very low, however, resultant oxidant concentrations are expected to be safely below the NAAQS for ozone.

VISUAL RESOURCES (pages 243-245)

Comments: The DEIS indicates the high visual quality of the Upper Carson River Basin would be diminished by reduced air quality due to increased traffic; yet earlier in the DEIS, it was indicated no adverse effects to air quality are expected.

Response: Adverse effects of development on air quality, as described in the air quality, is measured in relation to the National Ambient Air Quality Standards. Violations of these standards are not expected. Because the air is of such high quality in the Carson Valley, air quality can be diminished without violation of these standards.

Comment: Diamond Valley Road, Foothill Road, and Jack's Valley Road should be added to the list of scenic highways. (page 244) (LRWQCB)

Response: Although the DEIS does not disagree that the above-mentioned roadway segments are scenic, the list of roadways identified on page 244 (i.e., segments of Highway 89 and Blue Lakes Road) were singled out because they are of exceptional visual quality and undeveloped at present or are highly visible from other areas. A further discussion of why these particular roadways were noted in particular is explained in the DEIS Technical Appendices (pages 272-287).

Comment: Visual disturbance in the Highway 89 area of the West Fork of the Carson River will occur during excavation and clearing. (Moser)

Response: This is definitely a possible direct impact if STPUD selects the Gansberg site for its effluent disposal. This impact is identified in the DEIR (p. 210) on the STPUD facility plan. However, the proposed reservoir site is the Heise property. The secondary impact of spillover into Alpine County in the vicinity of Highway 89 and the West Fork of the Carson River would have serious impacts on the natural beauty of the area, if the development does not follow sensitive design guidelines.

LAND USE (pages 246-257)

Comment: The DEIS states that most development in the Carson Valley occurs on lands designated low to medium densities. In fact, roughly 60% of the dwelling units are located where the density is 1 dwelling unit per acre or less. (page 250, para. 3) (DCPD)

- **Response:** The text should be revised to read:

Almost all agricultural land in the Carson Valley is devoted to irrigated pasture and forage crops, cattle raising, and dairy farming. Of the developed lands, residential uses at lower densities (less than 1 unit/acre) predominate. Medium and high densities (greater than 2 units/acre) are typically found in the Minden-Gardnerville urban core and other scattered sites. New development such as Gardnerville Ranchos is medium density. The only industry in the valley is the Bentley Corporation.

Comment: The requirement that zoning takes precedence over master plans is mandated by Nevada Revised Statutes 278.349 (3)(e). (page 255, para. 1) (DCPD)

- **Response:** Text should be revised to insert correct citation:

In Douglas County, land subdivision is controlled by the Douglas County Subdivision and Parcel Map Ordinance (Douglas County Code, Chapter 16.04 et seq.) and by the Nevada Revised Statutes (Chapters 117, 278, and 278A). The subdivision ordinance discourages any land division that is inconsistent with either the Douglas County Master Plan or Zoning Ordinance. (Zoning takes precedence if there is any discrepancy (Douglas County Code, Section 16.08.030B. (5), in accordance with NRS 278.349 (3)(e)). Under state law, the subdivision ordinance does not apply to land divisions creating parcels of 40 acres or more in counties having a population of less than 200,000.

Comment: Updated information on development proposals is available from the Douglas County Planning Department. (page 255). (DCPD)

Response: The DEIS notes that the discussion on development proposals was current as of the time of its preparation. The County Planning Department has provided updated information which is presented below.

- Westwood Village was approved with 310 dwelling units, rather than the originally proposed 460 units.
- The appeals to the Board of Commissioner's on the Newman Construction and Fremont projects were denied.
- Buckbrush at 646 units and Toler Heights at 473 units are major subdivisions that have received approval.
- There are presently 2252 units on approved tentative maps in the Carson Valley.

- There are 3,085 vacant lots, of which 143 are in the Johnson Lane area and 222 in Indian Hills.

Comment: Assumptions regarding density of spillover population are too high and would represent a major reversal of past and present development patterns in Carson Valley. Discussion on where development would occur needs to be clarified. (pages 256-257) (DCPD) Note that water appropriation may not be available. (NDEP)

Response: The economic profile of the spillover population is primarily one of low and moderate income households (i.e., those least able to afford housing in the basin). As such, these households would be seeking housing that is relatively inexpensive and within easy commute distance of their jobs in the basin. Such housing, according to present zoning, would be centered around the Genoa portion of traffic zones 65, 66, and 67 (in areas zoned E-1), in the Minden-Gardnerville core area of traffic zones 53, 55, 59, and 60 (in areas zoned R-1 through R-3). Although there are other residential communities, particularly the Ranchos (traffic zone 54) and Indian Hill (traffic zone 64), the data source used did not show these areas to have any areas zoned for residential use. (See Carson City-Douglas County Area Transportation Study, p. 40, Table 2, "Douglas County Zoning - Acres.") Consequently, these areas were not considered prime locations for accommodating the spillover population. The areas that are identified as most likely to accommodate the spillover population include the lands within the Minden-Gardnerville "urban core." How much land area would be required to accommodate the spillover population is a function of what density is assumed—a higher density means a lower land requirement; a lower density, a higher land requirement.

Present R-1 zoning requires a minimum lot size of 8,500 square feet (or 5-6 dwelling units per acre). While such lot sizes are small compared to the present norm of 1 acre or more per dwelling unit, the County's Master Plan states:

There will be more urban residential densities reflective of the standard 'city lot' of about 7,500 sq.ft. as well as some rather limited multiple residential areas at densities of 8 dwelling units/acre and up to 15 dwelling units/acre. These higher density areas are related to urban cores and will require full sewer, water and paving standards ... Although a comparatively small amount of valley acreage is devoted to urban residential use (4,600 acres $\pm$ or about 6% of the total valley floor) about one-half of total anticipated future population will be contained in these areas.

Moreover, R-3 multiple residential zoning permits densities to be increased to 20 dwelling units/acre. As a result, it did not appear inappropriate to assume that the spillover population would spur development at a medium density of six dwelling units per acre. It should be recognized; nevertheless, that the County Planning Department's point is absolutely correct: future development densities will be markedly different from current densities.

To reflect the County's concern this text should be revised to read:

- Development pressures resulting from the spillover population will be most severe under Scenarios 4 and 5. In accordance with the County's general plan, it is expected that much of the development would occur in designated urban and suburban centers that currently have residential (R-1 through R-3) or estate (E-1 through E-3) zoning. Given the economic profile of the spillover population, the greatest competition would occur first among the available multiple residential units, located primarily in the Minden-Gardnerville area. Other areas likely to accommodate some of the spillover population include Genoa, the Johnson Lane area, Indian hills, and Gardnerville Ranchos. To the extent that development is accommodated in these latter areas, some conversion of agricultural lands would be required, as most of these areas outside of existing communities are agriculturally zoned.

As seen in Figure 17, all of the potential development areas lie within the critical nesting area of the Swainson's hawk and the Genoa, Indian Hills, and Gardnerville Ranchos areas are within the wintering area of the bald and golden eagles. Consequently, there is a possibility, although relatively slim, that development under Scenarios 4 and 5 could affect the valley's biological resources. Similarly, the valley is of exceptional visual quality and uncontrolled growth would detract from that attribute. The biological and visual impacts mentioned above can be substantially mitigated. However, of greater concern is the ability of the area to accept further demand on a limited water supply. It should be remembered that new appropriations for subdivisions may not be available. The intensity of development may be such that the converted water rights would be inadequate to satisfy water demands (see "Water Supply").

The land requirements to accommodate the spillover population assume development would be on the average of 6 dwelling units per acre. This development density is much greater than the traditional densities of one or more areas per dwelling unit found in the Carson Valley. If current density patterns prevail, accommodation of the spillover population would mean much more land would have to be converted from agricultural to residential uses.

Comment: It should be mentioned that agricultural water rights can be converted into quasi-municipal water rights which allow the property owner to subdivide the land. (page 257, paragraph 5) (NDEP)

- Response: The paragraph should be revised to read:

The availability of water resources in the Carson Valley is very limited and has led the State Engineer to declare it a "designated basin" under state law. The State Engineer has review authority over all subdivisions. A determination must be made that there is sufficient water to serve the proposed development. In a designated basin, the State Engineer can exercise greater authority and it is highly unlikely that new water appropriations could be obtained. This restriction may have the effect of forcing development to locate within service distance of the Minden and Gardnerville water systems. On the other hand, Nevada law does provide for a conversion of agricultural water rights to quasi-municipal which would enable a property owner to subdivide.

HOUSING (pages 258-259)

Comment: Information presented in the DEIS on the number of housing permits issued are not carefully referenced. (page 258) (DCPD)

Response: The information on the number of housing permits issued was obtained through personal communications with Doc Smith of the Building Department in mid-1978. The figure of 800 housing permits for "last year", refers to the number of permits issued in 1977. Data provided by the County Planning Department, as comments on the DEIS, show a significant variance—only 453 permits issued in 1977 within the Carson Valley. It is possible during the communication with Mr. Smith that figures for all of Douglas County were received and thus the figure of 800 permits would also include those issued within the basin. Otherwise, no explanation can be offered for the discrepancy.

TRANSPORTATION (pages 259-264)

Comment: 1978 traffic volume (AADT) at Nevada Highway 88 and U.S. 395, north of Minden, is too low. (page 262) (DCPD)

Response: The description of the location of the traffic count is misleading. The 1978 daily traffic volume of 3,100 listed in the table on page 262 of the DEIS is for Nevada Highway 88 south of the junction (with U.S. 395) that is north of Minden. Traffic data was obtained from the Nevada Department of Transportation.

Comments: More detailed analysis of impacts of widening Route 19 is needed because Route 50, along the eastern shoreline, cannot handle the diversion of traffic and the widening of Route 50 would cause major environmental problems. (page 273) (Caltrans)

Response: The widening of Route 19 was not specifically suggested, although it might be included under Mitigation Measure #3, which suggests improving roads to accommodate traffic growth. If widening of Route 19 were to be proposed as part of this measure, the costs and environmental problems should be analyzed. As an alternative, U.S. Highway 50 could be widened and improved to carry the additional traffic diverted from Route 19.

RECREATION (pages 264-266)

Comment: The description of Indian Creek Reservoir includes swimming as a major activity. It should be noted that water contact recreation is not a recognized beneficial use of the reservoir. (page 265) (LRWQCB)

- **Response:** The text should be revised to read:

Federal Recreational Facilities

Toiyabe National Forest is administered by the Region V office of the U.S. Forest Service. The Forest Service operates one picnic area and five campgrounds in the study area. The Bureau of Land Management (BLM) operates the Indian Creek Recreation Area in Diamond Valley, California. Indian Creek Reservoir, the holding reservoir for Lake Tahoe's recycled wastewater, is widely enjoyed for various non-contact water recreational activities, such as boating, fishing, and aesthetic enjoyment. (The California Department of Fish and Game stocks the reservoir with 30,000 fish per year.) The recreation area has camping sites for recreational vehicles and tents, picnicking areas, restroom facilities, a boat ramp, and hiking trails. The area is used fairly heavily, and in the early 1970s, before the above facilities were constructed, the reservoir was used by 1,000 anglers per weekend.

Comment: The inventory of recreational facilities operated by local jurisdictions does not include Douglas County facilities. (page 265) (DCPD)

- **Response:** The text should be revised to read:

Douglas County owns and operates Lampe Park in Gardnerville and the Rodeo Grounds located south and east of Gardnerville. Lampe Park has ball fields, tennis courts, picnic tables, a concession stand, and restroom facilities. The County has also expressed its intention of acquiring some BLM land for use as parklands (Douglas County General Plan, 1974). Alpine County offers Turtle Rock Park on Highway 89, three miles north of Markleeville. The County-owned facility has sites for recreational vehicles and tent camping, flush toilets, and fishing opportunities.

PUBLIC SERVICES (pages 266-272)

Comment: The county's fiscal resources are not able to meet service demands in the Carson Valley, and recent spending limitation legislation is likely to aggravate the situation. (page 269) (DCPD)

Response: See response given in the Fiscal Concern discussion under Lake Tahoe Basin (pages 156-157).

UTILITIES (Pages 272-280)

Comments: Proposals to develop a liquefied natural gas facility by Southwest Gas have been abandoned. (page 274) (DCPD)

Response: Since the DEIS was issued, Southwest Gas has decided to abandon its proposal to construct a liquefied natural gas storage facility east of Carson City. The utility now plans to construct a new facility in Lovelock from which it will run a pipeline to the Carson Valley and Lake Tahoe.

Comments: Comparative water use figures for urban and agricultural areas prepared by the County differ from those in the DEIS. (page 275) (DCPD)

Response: The information provided by the County shows that even fewer homes than indicated in the DEIS can be supported on the water used to irrigate an acre of land. The County's data is reproduced here and suggest that water supply would become even more critical as agricultural lands are converted to urban areas.

Estimates prepared by the Douglas County Planning staff indicate that 2.5 acre-feet/year is necessary to irrigate one acre in the Carson Valley (based upon 1974 Census of Agriculture). This amount of water is enough to supply approximately 2.2 single-family dwellings with 1000 gallons per day. However, single-family dwellings do not occur absent of commercial and industrial developments. In the Carson Valley, for every 3 gallons of residential use there is a commensurate use of 4 additional gallons of water for commercial and industrial operations. In summary, water derived for irrigating one acre of land can support one single-family dwelling and the necessary commercial and industrial support facilities.

E. RESPONSES TO GENERAL COMMENTS ON THE MITIGATION MEASURES

Comments: The following comments were made regarding the mitigation measures and their use:

- they are politically questionable,
- they are beyond the authority of EPA or the sewer districts,
- they do not include methods to assess their adequacy or effectiveness and lack minimum criteria,
- they rely on agencies that traditionally have had poor records of implementation,
- they lack information on cost,
- they do not distinguish what each district individually is responsible for,
- they should be finalized subsequent to adoption of Final EIS,
- no effort was made to screen to recommend those that would be practical or reasonable.

(CTRPA, Glenbrook Properties, LRWQCB, Brecher, Ca. Resources Agency, Moser, DCPD, SLT, Lake Tahoe Audubon Society, NDEP, OPR, Seaman, Huss, Milbrodt)

Response: The discussion of the mitigation program in Chapter V of the FEIS will address the above concerns. Cost of mitigation, agency commitment to implementation, and milestones to assess the effectiveness of the mitigation measures are provided in Appendix B of the FEIS. The Mitigation Task Force which has shaped the mitigation program will continue to have a major role in monitoring its implementation.

F. ERRATA SHEET TO THE DEIS

List of Tables, Table 30 - page reference should be changed to p. 144.

p. 14, par. 3, last line should be revised to read:

determine whether the project can be funded for 10 mgd as proposed by the district.

p. 19, par. 1, line 10: "Upper River Basin" should be revised to read "Upper **Carson** River Basin"

p. 19, par. 2, line 7 & 8: "biological oxygen demand" should be revised to read **biochemical oxygen demand**

p. 42, par. 6, line 3: "Measurements taken no Indian Creek Reservoir" should be revised to read "Measurements taken **in** Indian Creek Reservoir"

p. 45, par. 2, line 3: "... is returned to the effluent pumping station. Where it is..." should be revised to read "... is returned to the effluent pumping station, **where** it is..."

p. 71, Table 15, "x's" for beneficial uses of minor streams in Area 634.10 should be shifted two positions to the left. The corrected table is shown on page 186.

p. 72, Table 16: The narrative water quality objectives were omitted from the table. Pages 187-190, entitled "Table 16 (Continued)", identify these objectives.

p. 74, par. 1, last line: "uses shown in Table 15 and 16." should be revised to read "uses **are** shown in Tables 15 and 16."

p. 75, par. 3, line 7: "... will not result in water quality prescribed in the policies," should be revised to read "... and will not result in water quality **less than that** prescribed in the policies."

p. 75-76: last line: "the primary concern for the preservation of the lake ecology" should be revised to read "the primary concern for the preservation of the lake **ecosystem.**"

p. 77, Table 18: units for nitrate and total P should be micrograms per liter.

p. 80, Table 21: Units for Total N, Total P, and Total Fe should be micrograms per liter.

p. 110, par 4, line 4: "Society" should be revised to read "**societies**".

par 5, lines 3 and 10: "Penzl" should be revised to read "**Pinzl**".

par 5, line 6: "Hopplopappus eximus" should be revised to read "Haplopappus eximus"

par 5, line 9: "Drabba stenoloba" and "D. asteriphora" should be revised to read "Draba stenoloba" and "D. asterophora".

par 5, line 11: "Lupinus montagenus" should be revised to read "Lupinus montigenus"

TABLE 15
BENEFICIAL USES FOR SURFACE AND SUB-SURFACE WATERS IN TAHOE BASIN

Area Code	Hydrologic Unit, Subunit Drainage Feature	Description	Mun	Agr	Ind	Gwr	Rec 1	Rec 2	Warm	Cold	Wild	Sal	Pow	Rare	Frsh	Receiving Water
634.00	LAKE TAHOE HYDROLOGIC UNIT															
634.10	SOUTH TAHOE HYDROLOGIC SUBUNIT															
	LAKE TAHOE	Lake	X	X			X	X		X	X					Truckee River
	HEAVENLY VALLEY CREEK	Perennial Stream	X	X		X	X	X		X	X					Trout Creek
	COLD CREEK	Perennial Stream	X	X		X	X	X		X	X					Trout Creek
	TROUT CREEK	Perennial Stream		X		X	X	X		X	X					Upper Truckee River
	SAXON CREEK	Perennial Stream		X		X	X	X		X	X					Trout Creek
	UPPER TRUCKEE RIVER	Perennial River	X	X		X	X	X		X	X					Lake Tahoe
	ECHO LAKES	Lakes	X				X	X		X	X					Echo Creek
	FALLEN LEAF LAKE	Lake	X				X	X		X	X					Taylor Creek
	TAYLOR CREEK	Perennial Stream		X		X	X	X		X	X					Lake Tahoe
	TALLAC CREEK	Perennial Stream		X		X	X	X		X	X					Lake Tahoe
	TAHOE KEYS	Artificial Bays				X	X	X		X	X					Lake Tahoe
	CASCADE LAKE	Lake	X				X	X		X	X			X		Cascade Creek
	CASCADE CREEK	Perennial Stream		X		X	X	X		X	X					Lake Tahoe
	EAGLE CREEK	Perennial Stream		X		X	X	X		X	X					Lake Tahoe
	o GROUNDWATER		X	X												
	MINOR STREAMS							X	X		X	X	X		X	
634.20	NORTH TAHOE HYDROLOGIC SUBUNIT															
	LONELY GULCH CREEK	Perennial Stream	X	X		X	X	X		X	X					Lake Tahoe
	MEEKS CREEK	Perennial Stream		X		X	X	X		X	X					Lake Tahoe
	GENERAL CREEK	Perennial Stream		X		X	X	X		X	X					Lake Tahoe
	McKINNEY CREEK	Perennial Stream		X		X	X	X		X	X					Lake Tahoe
	MADDEN CREEK	Perennial Stream	X			X	X	X		X	X					Lake Tahoe
	BLACKWOOD CREEK	Perennial Stream					X	X		X	X					Lake Tahoe
	WARD CREEK	Perennial Stream	X			X	X	X		X	X					Lake Tahoe
	BURTON CREEK	Perennial Stream				X	X	X		X	X					Lake Tahoe
	GRIFF CREEK	Perennial Stream				X	X	X		X	X					Lake Tahoe
	DOLLAR CREEK	Perennial Stream		X		X	X	X		X	X					Lake Tahoe
	WATSON CREEK	Perennial Stream				X	X	X		X	X					Lake Tahoe
	CARNELIAN CREEK	Perennial Stream		X		X	X	X		X	X					Lake Tahoe
	o SPRINGS		X	X		X	X	X		X	X					South Tahoe Groundwater
	o GROUNDWATER		X	X											X	
	MINOR STREAMS			X		X	X	X		X	X					

LEGEND:

Mun: municipal and domestic supply
 Agr: agricultural supply
 Ind: industrial service supply
 Pow: hydropower generation
 Gwr: groundwater recharge
 Frsh: freshwater replenishment for inland lakes and streams

Rec-1: water contact recreation
 Rec-2: non-water contact recreation, including esthetic enjoyment
 Warm: warm freshwater habitat to sustain aquatic resources
 Cold: cold freshwater habitat to sustain aquatic resources
 Wild: wildlife habitat
 Rare: preservation of rare and endangered species
 Sal: saline water habitat

Sources: California State Water Resources Control Board, Water Quality Control Plan Report, North Lahontan Basin (6A), 1975.

TABLE 16 (Continued)

General Objectives

Wherever the existing quality of water is better than the quality of water established herein as objectives, such existing quality shall be maintained unless otherwise provided by the provisions of the State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California", including any revisions thereto.

Objectives For Surface Waters

In addition to the objective of nondegradation, the following water quality objectives apply to all surface waters of the Basin. These objectives represent maximum acceptable levels of water quality that shall be maintained in the event that exceptions are made with respect to nondegradation in accordance with the provisions of the State's Nondegradation Policy.

Color

Waters shall be free of coloration that causes nuisance or adversely affects beneficial uses. (This objective is believed to be equivalent to the State of Nevada standard of a maximum 10 Platinum Cobalt Unit Change).

Tastes and Odors

Waters shall not contain taste or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, that cause nuisance or adversely affect beneficial uses.

Floating Material

Waters shall not contain floating material, including solids, liquids, foams and scum, in concentrations

that cause nuisance or adversely affect beneficial uses.

Suspended Material

Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

Settleable Material

Waters shall not contain substances in concentrations that result in the deposition of material that cause nuisance or adversely affect beneficial uses.

Oil and Grease

Waters shall not contain oils, greases, waxes or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect beneficial uses.

Biostimulatory Substances

Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses. Numerical objectives for nutrients are specified in Table 16

Sediment

The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

Turbidity

Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity shall not exceed natural levels by more than 10 percent.

TABLE 16 (Continued)

Additional turbidity objectives for specific surface waters are contained in Table 16

pH

The pH shall not be depressed below 6.5 nor raised above 8.5, except in Eagle Lake where the pH shall not be depressed below 8.0 nor raised above 9.5 and in Lake Tahoe where the pH shall not be depressed below 7.0 nor raised above 8.4.

Changes in normal ambient pH levels shall not exceed 0.5 units in fresh waters with designated COLD or WARM beneficial uses.

Dissolved Oxygen

The dissolved oxygen concentration, in terms of percent saturation, shall not be depressed by more than 10 percent, nor shall the minimum, dissolved oxygen concentration at any time be less than 80 percent of saturation or less than the following limits, whichever is more restrictive:

Waters designated WARM.....5.0 mg/l
Waters designated COLD.....7.0 mg/l

Bacteria

Waters shall not contain concentrations of coliform organisms attributable to human wastes. Also, in waters designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period, shall not exceed a log mean of 200/100 ml, nor shall more than 10 percent of total samples during any 30-day period exceed 400/100 ml, with the following exceptions:

Eagle Lake
Susan River

Lake Tahoe
Truckee River
East Fork Carson River
West Fork Carson River
East Walker River
West Walker River
Lake Topaz
Bryant Creek

The fecal coliform concentration for these waters and their tributaries, based on a minimum of not less than five samples for any 30-day period, shall not exceed a log mean of 20/100 ml, nor shall more than 10 percent of total samples during any 30-day period exceed 40/100 ml.

In waters designated for noncontact recreation (REC-2) and not designated for contact recreation (REC-1), the average fecal coliform concentration for any 30-day period, shall not exceed 2000/100 ml nor shall more than 10 percent of samples collected during any 30-day period exceed 4000/100 ml.

Temperature

Temperature objectives for COLD interstate waters are as specified in the "Water Quality Control Plan for Control of Temperature in The Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" including any revisions thereto.

In addition, the following temperature objectives apply to surface waters:

The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not create a nuisance or adversely affect beneficial uses.

At no time or place shall the temperature of any WARM water be increased

TABLE 16 (Continued)

by more than 5°F above natural receiving water temperature. Temperature of COLD water shall not be raised above natural levels.

Toxicity

All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration or other appropriate methods as specified by the Regional Board.

The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors, shall not be less than that for the same water body in areas unaffected by the waste discharge, or when necessary, for other control water that is consistent with the requirements for "experimental water" as described in Standard Methods for the Examination of Water and Wastewater, latest edition. As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour bioassay.

In addition, effluent limits based upon acute bioassays of effluents will be prescribed where appropriate, additional numerical receiving water objectives for specific toxicants will be established as sufficient data become available, and source control of toxic substances will be encouraged.

The discharge of wastes shall not cause concentrations of un-ionized ammonia (NH_3) to exceed 0.025 mg/l (as N) in receiving waters.

Pesticides

The summation of concentrations of total identifiable chlorinated hydrocarbons, organophosphates, carbonates, and all other pesticide and herbicide groups, in all waters of the basin, shall not exceed the lowest detectable levels, using the most recent detection procedures available. There shall be no increase in pesticide concentrations found in bottom sediments or aquatic life.

Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of pesticides in excess of the limiting concentrations set forth in California Administrative Code, Title 17, Chapter 5, Subchapter 1, Group 1, Article 4, Section 7019, Table 4.

Chemical Constituents

Water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the limits specified in California Administrative Code Title 17, Chapter 5, Subchapter 1, Group 1, Article 4, Section 7019, Tables 2, 3, and 4.

Waters designated for use as agricultural supply (AGR) shall not contain concentrations of chemical constituents in amounts that adversely affect such beneficial use.

Numerical objectives for individual waters are contained in Table 16

Radioactivity

Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant,

TABLE 16 (Continued)

animal, or aquatic life.

Waters shall not contain concentrations of radionuclides in excess of the limits specified in California Administrative Code, Title 17, Chapter 5, Subchapter 1, Group 1, Article 4, Section 7019, Table 5.

Water Quality Objectives for Specific Surface Waters

Numerical water quality objectives for specific surface waters of the Basin are presented in Table 16 .

As part of the State's continuing planning process, data will be collected and numerical water quality objectives will be developed for those constituents in Table 16 where sufficient information is presently not available for the establishment of such objectives.

Objectives for Groundwater

In addition to the objective of non-degradation, the following water quality objectives apply to all groundwaters of the Basin. These objectives represent maximum acceptable levels of water quality that shall be maintained in the event that exceptions are made with respect to nondegradation in accordance with the provisions of the State's Nondegradation Policy.

Tastes and Odors

Groundwaters shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

Bacteria

In groundwaters used for domestic or municipal supply (MUN) the median concentration of coliform organisms

over any seven-day period shall be less than 2.2/100 ml.

Chemical Constituents

Groundwaters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the limits specified in California Administrative Code Title 17, Chapter 5, Subchapter 1, Group 1, Article 4, Section 7019, Tables 2, 3, and 4.

Groundwaters designated for use as agricultural supply (AGR) shall not contain concentrations of chemical constituents in amounts that adversely affect such beneficial use.

Radioactivity

Groundwaters shall not contain concentrations of radionuclides in excess of the limits specified in California Administrative Code, Title 17, Chapter 5, Subchapter 1, Group 1, Article 4, Section 7019, Table 5.

Objectives For Specific Groundwaters

Specific mineral objectives for groundwater basins are not included at this time due to the wide range of values experienced in each basin. Considerable data is available for establishing existing quality levels in specific parts of a basin as a result of concentrated usage of groundwater in these areas. However, data on vertical and horizontal variations in water quality within the basins are not presently developed, and it is not possible at this time to establish meaningful mineral objectives for these waters.

As part of the State's continuing planning process, appropriate data will be collected and numerical water quality objectives developed for mineral constituents in groundwaters where sufficient information is presently not available.

- par. 7, line 3: "stream environments zone" should be revised to read "stream environment zones"
- p. 123, par. 4, line 2: "Scenarios 2 and 4 call for ..." should be revised to read "Scenarios 2 and 5 call for..."
- p. 132, par. 2, line 3: "averages" should be revised to read "average"
- p. 152, par. 6, line 3: "... by the more stringent CTRPA Land Use Ordinance. (Although recent actions by ...)" should be revised to read "... by the more stringent CTRPA Land Use Ordinance (although recent actions by the city council indicate that they feel their authority is being unfairly preempted by CTRPA)."
- p. 154, 3rd line from bottom: "UCSC" should be revised to read "uses"
- p. 161, par. 3, line 3: "spillover" should be revised to read "spill over"
- p. 165, par. 1, last line: delete closing parenthesis
- p. 168, par. 5, 1st sentence: should be revised to include airports in Douglas County.
- "There are airports at South Lake Tahoe (Tahoe Valley Airport), Truckee (Tahoe-Truckee Airport, which serves only general aviation), Reno (Reno International Airport), near Minden (Douglas County Airport), and Carson City (Carson City Airport)." (League to Save Lake Tahoe, Douglas Co. Planning Department)
- p. 183, par. 1, line 7: "clincis" should be revised to read "clinics"
- par. 2, line 2: "Nevada site" should be revised to read "Nevada side"
- par. 2, line 5: "new high school area envisioned" should be revised to read "new high schools are envisioned"
- par. 3, reference: "(CTPA, 1977)" should be revised to read "(CTRPA, 1977a)"
- p. 184, Questions insert comma, after "health care systems" to read "To what extent will capacities of health care systems, schools, and fire protection and police services be adequate to meet demand?"
- p. 185, par. 2, line 7: "four acute-care beds per 100 population" should be revised to read "four acute-care beds per 1000 population"
- p. 200, number of campsites in the STPUD service area for 1978: "11,102" should be revised to read "1,102"
- p. 205, par. 1 under impact measurements, line 4: "Savings for conservation should be revised to read "Savings from conservation"
- p. 208, Mitigation Measure #3, Description, line 3: "descretion" should be revised to read "discretion"
- p. 208, Mitigation Measure #4, Description: The text should be revised to reflect that in Nevada, wastewater treatment facilities are only eligible for 75-85 percent of the capital cost.

p. 212, Question: Insert "?" at the end of the question.

p. 214, 1st line: "1977" should be revised to read "1978"

following p. 219: text was omitted and is reproduced here on page 193.

p. 236, par. 2, line 1: "the responsibility for the establishing" should be revised to read "the responsibility for establishing"

par. 5, line 3: "discharges near Muller Land Bridge" should be revised to read "discharges near Muller Lane Bridge"

p. 237, Table 38: Water quality objectives were omitted for the California portion of the Carson River tributaries. They are reproduced here on page 194. The narrative standards are the same as those that have been appended to Table 16 of the DEIS.

Total number of violations for fecal coliform should read "7" not "77"

The following note was omitted from the table - "Two values are indicated for each monitoring station for each pollutant. The top figure indicates the number of violations measured at the station; the lower number indicates the standard."

p. 245, par. 2, line 4: "Douglas County General Plan" should be revised to read "Douglas County Zoning Ordinance".

p. 249: Table should read "Table 40"

p. 258, par. 4, line 3: "a additional 23 people" should be revised to read "an additional 23 people"

p. 259, par. 4, line 2: "in Figure F-4" should be revised to read "in Figure 23"

p. 265, par. 2, 1st sentence should be revised to read: "The Toiyabe National Forest, along with the Eldorado and Tahoe National Forest and the Nevada portion of the Heavenly Valley Ski Area, is administered by the Lake Tahoe Basin Management Unit, Region V of the U.S. Forest Service."

p. 274, next to last line "Liquefied Petroleum Gas" should be revised to read "Liquefied petroleum gas"

p. 280, par. on Energy, line 5: "contigent" should be revised to read "contingent"

Lands surrounding Indian Creek Reservoir support pinyon pine-Jeffrey pine woodlands and sagebrush and bitterbrush understory. When growing in association with bitterbrush, a valuable browse plant, pinyon woodlands provide an exceptional food resource for wildlife.

Several different types of streamside plant associations occur in the study area. Black cottonwood and willow line the streams of the valley floor and have been planted or become naturalized along irrigation and diversion ditches. Understory plants are subject to heavy browsing in grazing areas and are often absent there. Seeps and springs are more common on the Sierran slopes, but occur throughout the Pine Nuts Mountain as well. At these higher elevations, quaking aspen grows with a variable understory of willows, alder, serviceberry, and other shrubs. Aspen groves are often associated with wet meadows, which, while not as extensive or well-developed as the wet meadows of the Lake Tahoe Basin, have similar value to wildlife. Streams at the southern end of the basin flow out of the Toiyabe National Forest. In this region, around Hope Valley, Diamond Valley, and elsewhere, the streamside plants are more typically Sierran, with black cottonwood, aspen, and mountain alder growing in association with a mix of conifers and variable herbaceous plants and shrubs. Because of the greater amount of available moisture, meadows are more typical in this area than elsewhere in the Upper Carson River Basin.

Before the wetlands of the Carson Valley were converted on a large scale to agricultural use, they were probably confined to the immediate margins of the free-flowing streams that crossed the basin floor. Although minor patches of cattail and bulrush marsh do still occur throughout the basin, the only two remaining marshes of significance are the Walleys Hot Springs Marsh at the foot of the Sierras, and the more extensive wetlands of the Washoe Valley, north of and adjacent to Washoe Lake. Cattails, bulrush, and other emergent herbaceous plants grow in these larger marshes. Irrigated agricultural soils in regions of low rainfall tend to accumulate salts over time. As a consequence, concentrations of salt in irrigation return waters are often high. Both major natural marshes receive runoff from irrigated lands to the south, and the effects of these waters on the vegetational components is not known. Long-term effects on the marshes, such as the appearance of more brackish water plants, might become apparent if further agricultural conversion and continuation of the present irrigation practices over time increases the salt imbalance in the runoff.

Human endeavors have produced agricultural lands and irrigated grasslands on the deep soils of the Carson Valley. In contrast to the Lake Tahoe Basin, biological resources have been little studied until recently, and published information is scanty.

Rare, Threatened, or Endangered Species. Camissonia nevadensis, a member of the evening-primrose family with no common name, has been proposed by the U.S. Fish and Wildlife Service for official listing as an endangered plant species (41 FR 117, June 16, 1976). This annual grows on sandy soils, including at least two sites near Carson City. The population of Camissonia nevadensis undergoes fluctuation, and the plant seems to be more common some years than others (Penzl, pers. comm.). Annual variation in rainfall often affects seed production and germination in annuals, particularly those in arid habitats, and may account for the recent increase in numbers.

CHEMICAL WATER QUALITY OBJECTIVES

Carson River							
Hydrologic Unit							
West Fork	~~55~~	~~1.0~~	~~1.0~~	~~20~~	~~0.02~~	~~0.20~~	~~0.015~~
Carson River	~~70~~	~~2.0~~	~~2.0~~	~~25~~	~~0.10~~	~~0.40~~	~~0.02~~
East Fork	~~80~~	~~4.0~~	~~4.0~~	~~25~~	~~0.12~~	~~0.20~~	~~0.020~~
Carson River	~~100~~	~~6.0~~	~~8.0~~	~~30~~	~~0.25~~	~~0.30~~	~~0.03~~
Indian Creek	~~305~~	~~24~~	~~-~~	~~-~~	~~-~~	~~4.0~~	~~0.04~~
Reservoir	~~520~~	~~31~~	~~-~~	~~-~~	~~-~~	~~6.0~~	~~0.08~~
Bryant Creek	~~140~~	~~15~~	~~35~~	~~-~~	~~0.20~~	~~0.20~~	~~0.02~~
Basin ^{b/}	~~200~~	~~25~~	~~50~~	~~50~~	~~0.50~~	~~0.30~~	~~0.03~~

^{b/}In addition, the following numerical water quality objectives shall apply specifically to surface waters of the Bryant Creek Basin:

Parameter	Maximum Value (mg/l except as noted)
Turbidity (JTU)	15
Alkalinity, total as CaCO ₃	70 (Minimum)
Acidity, total as CaCO ₃	10
Dissolved Iron	0.5
Manganese	0.5
Color, Pcu	15
Aluminum	0.1
Copper	0.02
Arsenic	0.05

Source: California State Water Resources Control Board, Water Quality Control Plan Report, North Lahontan Basin (6A), 1975.

G. RESPONSES TO COMMENTS ON THE DEIS TECHNICAL APPENDICES

APPENDIX A:

GROWTH SCENARIOS METHODOLOGY (pages 1 - 48)

Comment: Housing scenarios do not reflect possible growth ranges if unsubdivided lands were subdivided. (pages 9-11) (SLT)

Response: The City's assertion is correct; however, as explained in the DEIS, the existing land use policies were assumed to prevail and, as a result, CTRPA's policy on subdivisions applies.

Comment: Why does the relationship between hotel/motel rooms and hotel/motel visitors for STPUD in Scenario 2 differ from that relationship for the other scenarios? (Tables A-4 through A-9 and Table A-14) (STPUD)

Response: There should be significant variation among scenarios. The hotel/motel visitor estimates for STPUD shown in the DEIS for Scenario 2 (Table A-6 in the Technical Appendices of the DEIS) are in error. The number of hotel/motel rooms (Table A-14 in the Technical Appendices of the DEIS) is correct. When the visitor figure is corrected, the room occupancy rates for Scenario 2 are consistent with those for the other scenarios.

Since day visitors are estimated as a function of overnight visitors, an additional correction must be made to the estimate of day visitors under Scenario 2. Total visitor estimates will also change as a result of these corrections. The DEIS estimates of hotel/motel visitors in STPUD and of day visitors were slightly higher than the corrected figures.

- Corresponding revisions to the overnight visitor estimates and population totals for Scenario 2 in Table 7 (page 30 of the DEIS) are the following:

<u>Growth Scenario 2</u>	<u>Corrected Figures</u>	<u>Incorrect Figures in DEIS</u>
Overnight Visitors - STPUD	99,510	102,510
Overnight Visitors - Total	120,120	123,120
Day Visitors	87,690	89,870
Peak Day Population	255,370	260,550
Average Summer Population	187,710	192,380
Annual Visitor Days (Millions)	32.7	34.0

The corrected figures for peak day and average summer populations are about 2 percent lower than the incorrect figures in the DEIS. The estimate of annual visitor days is about 4 percent lower. These differences do not significantly affect the impacts identified for Scenario 2 that are estimated as a function of visitor population. The description of such impacts in the DEIS would slightly over-estimate impacts to the extent that the incorrect population figure was slightly higher than it should have been. The estimate of required treatment plant capacity

for Scenario 2 (page 200) is not at all affected since it was based on the correct number of hotel/motel rooms.

Comment: The CTRPA population figures used have since been recognized as too high. (Table A-5) (CTRPA)

Response: The DEIS used the best population statistics available at the time. Figures in use by CTRPA in mid-1980 are insignificantly different from those in the DEIS. For example, STPUD average summer population (excluding day users) in 1978 is assumed to be 68,000 in the DEIS (Table A-5). In CTRPA's Draft Environmental Impact Report, CTRPA 1980 Plan, Regional Plan Update, STPUD 1978 population is assumed to be 69,060 (calculated by subtracting the TTSA portion of the population from total El Dorado County population). This is a variation of only about 1-1/2 percent. Because there is a degree of uncertainty in any estimate, the variation between the two figures is insignificant and does not affect the conclusion of the DEIS.

APPENDIX C

METEOROLOGY AND AIR QUALITY (pages 77 - 107)

Comment: The inclusion of the APRAC-2 model in the carbon monoxide analysis is questioned. (page 77) (NDEP)

Response: The method was used in determining the impact of the growth scenarios on carbon monoxide concentrations. The method included the use of the APRAC-2 model to determine background CO concentrations. This work was performed independent of the NAP work, and therefore, the modeling results of the HIGHWAY or CALINE-2 models in preparation of the NAP were not used.

Comment: Assumptions for roadway configurations do not reflect prospective completion of the Loop Road or analysis of by-pass utilization. (page 78) (SLT)

Response: At the time the air quality model was formulated, the Loop Road controversy was still being debated and it was apparent that the State of California looked unfavorably upon its completion. Accordingly, it was decided that the best approach would be to assume the road configuration as it existed in 1978 with design improvements recommended in a traffic study by Barton-Aschman and Pillsbury in 1978.

VISUAL RESOURCES (pages 108 - 116)

Comment: Visual assessment of roadways do not appear to be justified and warrant further evaluation to support the conclusions reached in the DEIS. (page 109) (SLT)

Response: The City has suggested that commercial signs along Unit I have diminished because of city sign ordinance enforcement. The DEIS notes that visual conditions along roadway Unit I are also affected by the increase in commercial

activity, and this factor, more than the amount of commercial signage, accounts for the reduction in visual ratings. The City also notes in reference to Unit 35 that on-street parking is not permitted on U.S. 50; however, Unit 35 refers to Al Tahoe. The City further states that the Park Tahoe structure does not block mountain views for any resident. It should be realized that the visual assessment considers a structure's impact on views not only from residences, but also from the roadway. Consequently, the Park Tahoe structure does obstruct views of the mountains beyond. Finally, the City questions the claim that commercial uses south of U.S. 50 on State Route 89 has increased somewhat, as this activity is not borne out by City records or casual observation. It should be remembered that the DEIS is comparing differences in conditions that existed in 1972 when the original field survey was conducted and 1978 when the DEIS was being prepared. Over this time period, commercial activity has increased somewhat.

Comment: More data is needed to support the statement that single-family homes have been converted to tourist accommodations, as city records do not verify this. (page 111) (SLT)

Response: It should be realized, as mentioned in the previous response, the evaluation of conditions along roadsides compares two periods in time, approximately six years apart. During this time frame, a conversion of residential units to tourist accommodations has been observed; however, if the City has information that would indicate otherwise, such information would be useful, particularly since a visual analysis will most likely be conducted as part of the threshold study called for by the Bistate Compact.

APPENDIX D

PUBLIC SERVICES/FISCAL CONCERNS (pages 209-230)

Comment: Further explanation is needed regarding the statement that city police services are divided equally between the residents and tourists. This is not the basis for management of law enforcement within the City. (page 212) (SLT)

Response: The statement is not intended as an indication of how the City deploys its police forces. Rather, it is a statement intended to show the impact of visitor population in the south shore of the basin. Visitor population averaged about 30,000 daily, which is about 150 percent of the city's population in 1979. The City's police serve not only the permanent residents but must also respond to calls for service resulting from a significant influx of visitor population.

Comment: Export of solid waste from the basin is mandated by state law and not just TRPA ordinances. (page 213) (SLT)

- **Response:** The text should be revised to reflect the city's comment.

Comment: The analysis of revenue sources to finance anticipated public service needs does not touch upon the possibility of new county formation. (page 222 - 223) (SLT)

Response: The analysis of available revenue sources restricted itself to existing revenue sources in order to provide the most reasonable assessment of potential fiscal impacts. While the formation of a new county would possibly be another source of revenues in the future, the feasibility of creating a new Tahoe County was only being studied when the DEIS was being prepared, and prediction of possible revenues would have been difficult.

Comment: In addition to the regional, county, and service agencies identified as the implementing agencies for coordination of regional land use planning and capital facilities planning and budgeting, the DEIS should consider TBAG and the proposed areawide planning commission being considered by the City of South Lake Tahoe and El Dorado County. (page 227) (SLT)

Response: Approval of the grant award sought by the wastewater district is contingent upon obtaining firm commitments toward implementing the recommended mitigation measures. At the time the DEIS was being prepared, TBAG was only in its formative stages and an areawide planning commission had not been mentioned. In light of the status of these agencies at that time, it was not expected that they could have provided the necessary commitments to implement the mitigation program. However, this does not prevent these agencies from becoming effective participants in the mitigation program in the future.

Comment: The mitigation measure calling for consolidation of service districts should mention that consolidation requires voter or property owner initiation, possible revision to existing state laws, and that the Local Agency Formation Commission would have to be involved. (page 227) (SLT)

Response: The considerations raised by the city are significant concerns in any effort to reorganize governmental agencies and, as the city indicates, must be examined carefully before this measure could be considered feasible.

CULTURAL, ARCHAEOLOGICAL, AND HISTORICAL RESOURCES (pages 247-251)

Comment: The discussion on cultural resources should include reference to data compiled by the Lake Tahoe Historical Society. (page 247) (SLT)

Response: Information compiled by the Lake Tahoe Historical Society in its Lake Valley's Past (1971) was consulted in preparing the text on cultural, archaeological, and historical resources and is referenced in the bibliography of the DEIS Technical Appendices.

APPENDIX F

EXISTING AND INSTITUTIONAL FRAMEWORK (pages 311-344)

Comment: Under the identification of city and county responsibilities, law enforcement and transportation are not mentioned. (page 331) (SLT)

Response: Law enforcement is included under the broad category of public and environmental health services, and transportation is included under public works.

Comment: Efforts to tie city/county programs together on a bistate basis through TBAG joint powers agreements and regional planning need to be mentioned. (page 331) (SLT)

Response: The description of institutions provided in Appendix F of the DEIS was intended to provide a brief overview of the institutions existing when the DEIS was being prepared. As noted in previous comments, TBAG was just being formed and its role was uncertain. Since then, however, its role in basinwide planning and coordination has strengthened, as evidenced by its lead role in the preparation of a solid waste management plan, funded with a grant from EPA.

Comment: The discussion of legal issues is substantially incomplete and excludes references to pending litigation in state and federal courts which impact on Tahoe Basin land use control, existing organizations, and regulations. (pages 341-344) (SLT)

Response: The city is correct in pointing out that the DEIS only provides a sampling of court cases that were pending and relevant to water concerns and treatment plant capacity. It was never the intent to provide a comprehensive nor exhaustive compendium of other legal issues. The city's efforts in providing information on land use litigation are appreciated and is summarized here in the FEIS.

Land use litigation in the Lake Tahoe basin falls into three broad categories. First, there is the litigation concerning the validity, structure, and authority of the TRPA, created by bistate compact. The specific case citations of that litigation would consume far too much space and time to detail within the scope of these comments. It is sufficient to say, for these purposes, that the basic structure and operation of TRPA has been judicially declared valid, although conflicting opinions still exist as to its relationship with the CTRPA. The second broad category is that of litigation concerning the validity and structure of the CTRPA. At this writing the City of South Lake Tahoe is pursuing litigation in both state and federal courts testing the basic assumptions inherent in the EIS. That is, that CTRPA is not preempted by TRPA and that CTRPA may take actions in conflict with those of TRPA. Within that litigation there are also many legal questions and various other constitutional arguments too complex to be detailed in the space of this response. At this point, all that can reasonably be said is that virtually every assumption as to the legal authority of CTRPA made within the EIS is presently being challenged by the city and/or other local governments in the state and federal courts. (Note: The courts have since ruled in favor of CTRPA regarding its right to exist as a regulatory agency, although the revised Bistate Compact has strengthened TRPA's

role as the regional planning agency in the basin.) The third class of cases revolve around specific public works improvements, most notably the Loop Road. Again, without going into great detail, the city has aggressively litigated CTRPA's ability to block certain public works projects on grounds of both public safety and lack of jurisdiction. This litigation has taken place in both state and federal courts.

Comment: Discussion of STPUD contracts needs to be updated to reflect installation of sewers at Fallen Leaf Lake. (page 332) (LRWQCB)

Response: The discussion in this section was intended to provide pertinent and relevant information at the time the DEIS was prepared. As the LRWQCB indicates, conditions have changed and units at Fallen Leaf Lake are now sewered.

Comment: Discussion of actions seeking to enforce applicable water quality standards should be updated to reflect recent Regional Board actions. (pages 343-344) (LRWQCB)

Comment: The cases described in this section of the DEIS were chosen because of their relevance to the districts and the EIS at the time the DEIS was being prepared. Both cases have been resolved and are discussed in Chapter III of the FEIS.

V. MITIGATION PROGRAM

BACKGROUND

The DEIS has documented that existing conditions already strain the urban and natural environments. In particular, the DEIS identifies adverse impacts on water quality, air quality, visual conditions, housing, traffic, and recreation. Similar conclusions have been reached by a number of studies prepared on the Lake Tahoe Basin, the most recent being the Lake Tahoe Basin Water Quality Plan and the Western Federal Regional Council's Lake Tahoe Environmental Assessment.

Given that "many urban and environmental components within the Basin are now operating at their capacity limits" (Western Federal Regional Council, Lake Tahoe Environmental Assessment, December 1979, p. 176), does it make sense to consider a project that will certainly accommodate further development? First, the EIS was undertaken to document the extent of impacts that could be anticipated were the proposed project approved. The DEIS presents a cumulative, comprehensive picture of the impacts under different growth scenarios and indicates that other elements of the urban and natural environment, not now affected, would be adversely affected.

Second, it is clear from the no-project assessment here and in the DEIR prepared for STPUD that there are adverse water quality implications if some of the proposed project recommendations are not undertaken. Again, it is important for EPA, the public, and interested agencies to know the implications of not funding the project.

If these impacts can be ameliorated, the proposed project may be environmentally acceptable and eligible for grant assistance. Thus, an integral part of the EIS is the identification of steps to eliminate adverse environmental impacts.

FORMULATION OF MITIGATION MEASURES

As noted in Chapter I, neither DCSID nor Douglas County has given any written indication of its intent to participate in the mitigation program. It is presumed that DCSID is not participating at present. Consequently, references to the "district" in the following discussion applies only to STPUD.

The DEIS suggests a number of mitigation measures that are intended to eliminate or reduce the adverse impacts of accommodating further development. In February 1979 an interim product prepared by the EIS consultants, Sedway/Cooke, was presented to EPA titled, Environmental Consequences: Impact Assessment and Mitigation Measures. This document contained a list of potential mitigation measures; i.e., a laundry list of various approaches to reducing adverse environmental impacts. Measures on this initial list were screened, in terms of their effectiveness, and those measures considered most effective were described further in the February 1979 report. The document was distributed to the Technical Advisory Committee, a group of local, regional, state and federal

officials, for its review and comments, and based on the committee's input, a revised list of mitigation measures was prepared for the DEIS.

Where information was available, some estimate was made of the cost, timing, and status of implementation. A detailed assessment of each measure would have required a significant amount of additional time and research. It was understood that any grant approval would be conditioned upon consistency with the 208 and Nonattainment Plans, both of which are in the process of being adopted.

Admittedly one of the difficulties in mitigating the natural and cultural impacts is that the district does not have authority—legally, financially, nor institutionally—to implement many of the suggested measures, even if it wanted to. As a result, EPA is requiring the district to obtain commitments from agencies that do have such authority to mitigate adverse growth-related impacts. As an indication of involvement, EPA is requiring that implementation statements obtained from responsible agencies commit personnel and financial resources and provide a schedule with appropriate milestones prior to award of a construction grant. These milestones will in part serve to gauge the progress of implementation of the various mitigation measures. EPA and the Mitigation Task Force will evaluate all agencies on their future commitment statements and on their existing record of commitments. EPA must be sure that each implementing agency has the legal, financial, and institutional authority to assure implementation.

EPA's regulations for implementing NEPA and the EIS process clearly indicate that the Final EIS must list any mitigation measures necessary to make the project environmentally acceptable and that these measures must be implemented by the grantee, or cause to be implemented, prior to actual construction of the proposed action.

MITIGATION MEASURE PRIORITIES

In order to concentrate the district's efforts, EPA has identified adverse impacts that must be given priority and be mitigated. The Agency's concern is that the impacts be mitigated regardless of the method.

Plans, proposals, standards, and ordinances enacted since the DEIS was issued in October 1979 have greatly shaped the mitigation program and dictated where "priorities lie."

The Lake Tahoe Basin Water Quality Plan. The regulations governing water quality management plans require that facility plans be consistent with the 208 Plans. Therefore, the capacity recommended in the facility plan should reflect the restrictions of the 208 Plan. The proposed TRPA 208 Plan recommends restrictions on development in stream environment zones and high erosion hazard lands and recommends an extensive effort to remedy existing problems.

Nonattainment Plan. The Nonattainment Plans for Nevada and California have been proposed for conditional approval by EPA. Among other things, full approval is contingent upon local government commitment to meet milestones to implement the plans. EPA has authority under Section 316 of the Clean Air Act to withhold grants for sewage treatment plant construction.

Bistate Compact. The revised Compact restricts STPUD to 252 residential units for each of the calendar years 1980, 1981 and 1982. Environmental thresholds are expected to be established by 1983 which will govern how many, if any, additional building permits can be issued. The interim restrictions of 252 residential units should be reflected in the district's capacity request.

Thus, the priorities for mitigation are to protect water quality from the effects of urbanization accommodated by the project and to attain the national ambient air quality standards for the Lake Tahoe Basin consistent with the provisions of the Water Quality (208) Plan and the Nonattainment Plan. Major emphasis is placed on protecting stream environment zones, protecting high erosion hazard lands, and strictly adhering to the land capability system as approaches towards preserving the integrity of the lake. Traffic control measures with an emphasis on increased public transit opportunities is a cornerstone in the plans to meet National Ambient Air Quality Standards.

MITIGATION PROGRAM

The DEIS recommends 134 mitigation measures to be implemented by 92 groups and agencies. Realizing that the implementation of this program was a monumental task for a single agency, the STPUD in cooperation with the City of South Lake Tahoe and El Dorado County formed the Mitigation Task Force in January 1980. The purpose of the Task Force was to create a working relationship between those agencies who have authority within the Lake Tahoe Basin, pooling their data, analyzing each agency's capabilities, and identifying common goals in order to develop an implementable and environmentally sound mitigation program.

The Mitigation Task Force has modified the mitigation program suggested in the DEIS to include 98 mitigation measures to be implemented by 28 agencies. This program modification was in response to the following events:

1. The September 1980 notice of proposed rulemaking by the Environmental Protection Agency, which requires the implementation of the Lake Tahoe Basin Non-attainment Area Plan as a prerequisite for federal funding in the Lake Tahoe Basin.
2. The completion of a Water Quality Plan by the California State Water Resources Control Board and proposed amendments to the earlier TRPA 208 Plan, which limits the number of building permits issued and therefore reduces sewage capacity requirements within the STPUD.
3. The approval by California and Nevada of a revised TRPA Compact which limits the number of new building permits through April 1983.
4. The decision by STPUD to modify their proposed project from a 10 mgd expansion to a 7.5 mgd, no capacity expansion facility. (The most recent Consulting Panel Report of October 1980 found that with completion of the improvements to the existing plant presently in progress under Phase I of the Headstart Program, the plant will have returned to its original design capacity of 7.5 mgd and will be capable of complying with its NPDES permit with a reasonable degree of short-term reliability.) Because of the Bistate Compact, the CTRPA 1980 Regional Plan, and the proposed Lake Tahoe Basin Water Quality Plan, the district has reexamined its needs for a 10 mgd facility.

5. The California Tahoe Regional Planning Agency's adoption of their 1980 Regional Plan which implements a major section of the mitigation program.

The Mitigation Task Force, jointly with consultants who assisted in program coordination, has obtained implementation statements from each of the identified responsible agencies. The mitigation program and supporting implementation statements are contained in Appendix B of the FEIS.

As noted earlier, the implementation statements must demonstrate an agency's commitment,

- a commitment of financial resources,
- a commitment of staff,
- a commitment to a time schedule for completion, and
- a commitment to achieving certain objectives, or milestones.

Clarification and refinement of the agency commitments will continue to be sought by the Mitigation Task Force in the future in an effort by STPUD to obtain the Step Three Construction Grant. The district must demonstrate to EPA that satisfactory progress is being made toward implementation of mitigation measures prior to any grant awards.

VI. LIST of PREPARERS

A. U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION IX San Francisco, California

1. Responsibilities: lead agency

2. Personnel:

Dave Clark
Mark Zuckerman
Janet Rosati
Harry Ball
Dave Jesson
Craig Vassel
Chuck Flippo
Greg Fischer

B. SEDWAY/COOKE, Urban and Environmental Planners and Designers San Francisco, California

1. Responsibilities: prime contractor, project management, report preparation

2. Personnel:

Paul H. Sedway, principal-in-charge
Rodney Jeung, project manager
Sheila Brady, associate
Walter Rask, associate
Charles Collins, associate
Sue Hyde, planner
Greg Sutter, planner
Kathy Ottenberg, research assistant
Marco Aidala, research assistant
Rita Fuhr, editing
Mary Ann Tolmasoff, editing
Barbara Lekisch, public participation
Jack Schnitzius, senior graphics
Juliana Pennington, graphics
Katherine Deal, graphics
Lynda Wagstaff, graphics
Debra Shishkoff, graphics
Grace Wright, word processing

- C. SRI INTERNATIONAL, Air Quality Consultants
Menlo Park, California
1. Responsibilities: air quality analysis
 2. Personnel:
Dr. Walter Dabberdt, project manager
Eugene Shelar, research meteorologist
Christopher Maxwell, research meteorologist
Ken Nitz, research meteorologist
Larry Seiders, traffic consultant
- D. RECHT-HAUSRATH & ASSOCIATES, Urban Economists
San Mateo, California
1. Responsibilities: growth scenario development, economic and social analysis
 2. Personnel:
Linda Hausrath, project manager
Bruce Kerns, associate
Paul Rosenstiel, economist
Jeff Oxley, research economist
- E. JAMES M. MONTGOMERY, INC., Engineering Consultants
Walnut Creek, California
1. Responsibilities: facility plans analysis, and water quality and resources analysis
 2. Personnel:
Robert Ellis, project manager
Annette Cormier, research assistant
- F. ROBERT CONRADT, Transportation Consultant
San Rafael, California
1. Responsibilities: transportation analysis
 2. Personnel:
Robert Conradt, project manager
- G. MADRONE ASSOCIATES, Biologists
Novato, California
1. Responsibilities: biological resources analysis
 2. Personnel:
Diane Renshaw, project manager
Flip Dibner, research ecologist
Celia Lawren, research assistant

H. DAVID CHAVEZ, Archaeologist
San Francisco, California

1. Responsibilities: cultural resources analysis

2. Personnel:

David Chavez, project manager
Cindy desGrandchamps, research assistant

I. CHARLES M. SALTER ASSOCIATES, INC., Acoustical Engineers
San Francisco, California

1. Responsibilities: noise analysis

2. Personnel:

Charles Salter, project manager

VII. BIBLIOGRAPHY

In addition to the references cited in the DEIS, the following documents were used in preparing the FEIS.

- California State Water Resources Control Board, 1980. Economic and Fiscal Effects of SWRCB's Water Quality Plan for the Lake Tahoe Basin. Prepared by Recht Hausrath and Associates.
- California State Water Resources Control Board, 1979. Study on Water Use and Water Rights, Lake Tahoe Basin.
- California State Water Resources Control Board, 1980. Lake Tahoe Basin Water Quality Plan.
- California State Water Resources Control Board, 1980. Lake Tahoe Basin Water Quality Plan (Proposed Final Plan and Summary).
- Douglas County Sewer Improvement District No. 1, 1980. Supplement to Draft Facility Planning Report for Wastewater Management Grant No. C32-0140. Prepared by Creegan and D'Angelo, Consulting Engineers.
- South Tahoe Public Utility District, 1980. Evaluation of Wastewater Treatment System and Facility Planning. Prepared by the Consulting Panel on Wastewater Reclamation Plant Improvements.
- South Tahoe Public Utility District, 1981. Facility Plan Update. Prepared by Culp Wesner and Culp.
- Tahoe Regional Planning Agency, 1981. Lake Tahoe Basin Water Quality Management Plan: Draft Environmental Impact Statement.
- U.S. Environmental Protection Agency, Region IX, Surveillance and Analysis Division, 1980. NPDES Compliance Monitoring Report.
- Western Federal Regional Council, 1979. Lake Tahoe Environmental Assessment. Prepared by the Interagency Task Force.